

DEPARTMENT OF THE TREASURY

Internal Revenue Service

26 CFR Part 1

[TD9944]

RIN 1545-BP42

Credit for Carbon Oxide Sequestration

AGENCY: Internal Revenue Service (IRS), Treasury.

ACTION: Final regulations.

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

DATES:

Effective date: These regulations are effective on January 13, 2021.

Applicability dates: For dates of applicability, see §§ 1.45Q-1(i), 1.45Q-2(j), 1.45Q-3(f), 1.45Q-4(e), and 1.45Q-5(j).

FOR FURTHER INFORMATION CONTACT:

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SUPPLEMENTARY INFORMATION:

Background

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

Section 45Q was enacted on October 3, 2008, by section 115 of Division B of the Energy Improvement and Extension Act of 2008, Public Law 110-343, 122 Stat. 3765, 3829, to provide a credit for the sequestration of carbon oxide. On February 17, 2009, section 45Q was amended by section 1131 of Division B of the American Recovery and Reinvestment Tax Act of 2009, Public Law 111-5, 123 Stat. 115, 325. Section 45Q was further amended on December 19, 2014, by section 209(j)(1) of Division A of the Tax Increase Prevention Act of 2014, Public Law 113-295, 128 Stat. 4010, 4030, and again on February 9, 2018, by section 41119 of Division D of the Bipartisan Budget Act of 2018 (BBA), Public Law 115-123, 132 Stat. 64, 162, to encourage the construction and use of carbon capture and sequestration projects. On December 27,

2020, section 45Q was amended by section 121 of the Taxpayer Certainty and Disaster Tax Relief Act of 2020, enacted as Division EE of the Consolidated Appropriations Act, 2021, Public Law 116-260, 134 Stat. 1182, 3051, to extend the beginning of construction deadline for qualified facilities and carbon capture equipment by two years.

On March 9, 2020, the Department of the Treasury (Treasury Department) and the IRS published Revenue Procedure 2020-12, 2020-11 I.R.B. 511, and Notice 2020-12, 2020-11 I.R.B. 495. Revenue Procedure 2020-12 provides a safe harbor under which the IRS will treat partnerships as properly allocating the section 45Q credit in accordance with section 704(b). Notice 2020-12 provides guidance on the determination of when construction has begun on a qualified facility or on carbon capture equipment that may be eligible for the section 45Q credit.

On June 2, 2020, the Treasury Department and the IRS published a notice of proposed rulemaking (REG-112339-19) in the **Federal Register** (85 FR 34050) containing proposed regulations under section 45Q (proposed regulations). The Treasury Department and the IRS received written and electronic comments responding to the proposed regulations. A public hearing on the proposed regulations was held on August 26, 2020. Copies of written comments and the list of speakers at the public hearing are available at <https://www.regulations.gov> or upon request.

After full consideration of the comments received on the proposed regulations and the testimony presented at the public hearing, this Treasury decision adopts the proposed regulations with clarifying changes and additional modifications in response to comments and testimony as described in the Summary of Comments and Explanation of Revisions section.

Summary of Comments and Explanation of Revisions

I. Overview

The final regulations retain the basic approach and structure of the proposed regulations, with certain revisions. This Summary of Comments and Explanation of Revisions section discusses the revisions as well as comments received.

II. General Credit Provisions

A. Credit Amount in General

Section 45Q(a)(1) allows a credit of \$20 per metric ton of qualified carbon oxide (i) captured by the taxpayer using carbon capture equipment which is

originally placed in service at a qualified facility before the date of the enactment of the BBA (February 9, 2018); (ii) disposed of by the taxpayer in secure geological storage; and (iii) neither used by the taxpayer as a tertiary injectant in a qualified enhanced oil or natural gas recovery project nor utilized in a manner described in section 45Q(f)(5).

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

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

Section 45Q(a)(4) allows a credit of the applicable dollar amount (as determined under section 45Q(b)(1)) per metric ton of qualified carbon oxide (i) captured by the taxpayer using carbon capture equipment which is originally placed in service at a qualified facility on or after February 9, 2018, during the 12-year period beginning on the date the equipment was originally placed in service; and (ii) either (A) used by the taxpayer as a tertiary injectant in a qualified enhanced oil or natural gas recovery project and disposed of by the taxpayer in secure geological storage (referred to as “injection” or “injected,” respectively, throughout the final regulations), or (B) utilized by the taxpayer in a manner described in section 45Q(f)(5) (referred to as “utilization” or “utilized,” respectively, throughout the final regulations). Section 45Q(b)(1)(A)(i)(I) and (ii)(I) provides that the applicable dollar amount for activities under section 45Q(a)(3) for any taxable year beginning in a calendar year (1) after 2016 and

before 2027, is an amount equal to the dollar amount established by linear interpolation between \$22.66 and \$50 for each calendar year during such period, and (2) after 2026 is 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.”

Section 45Q(b)(1)(A)(i)(II) and (ii)(II) provides that the applicable dollar amount for activities under section 45Q(d)(4) for any taxable year beginning in a calendar year (1) after 2016 and before 2027, is an amount equal to the dollar amount established by linear interpolation between \$12.83 and \$35 for each calendar year during such period, and (2) after 2026, is 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.” Section 45Q(b)(1)(B) provides that the applicable dollar amount determined under section 45Q(b)(1)(A) is rounded to the nearest cent.

Section 45Q(b)(2) provides a method to compute the amount of qualified carbon oxide captured at a qualified facility that was placed in service before February 9, 2018, and for which additional carbon capture equipment is placed in service on or after February 9, 2018. For purposes of section 45Q(a)(1)(A) and (2)(A), the amount of qualified carbon oxide that is captured by the taxpayer is equal to the lesser of (i) the total amount of qualified carbon oxide captured at such facility for the taxable year, or (ii) the total amount of the carbon dioxide capture capacity of the carbon capture equipment in service at such facility on February 8, 2018 (the day before the date of enactment of the BBA). For purposes of section 45Q(a)(3)(A) and (4)(A), the amount of qualified carbon oxide captured by the taxpayer is an amount (not less than zero) equal to the excess of (i) the total amount of qualified carbon oxide captured at such facility for the taxable year, over (ii) the total amount of the carbon dioxide capture capacity of the carbon capture equipment in service at such facility on February 8, 2018. These final regulations explain the difference between a physical modification or equipment addition that results in an increase in the carbon dioxide capture capacity of existing carbon capture equipment, which will be treated as newly placed in service, and a mere increase in the amount of carbon dioxide captured by existing carbon

capture equipment, which will not be treated as newly placed in service.

Pursuant to section 45Q(b)(3), a taxpayer may elect to have the dollar amounts applicable under section 45Q(a)(1) or (2) apply in lieu of the dollar amounts applicable under section 45Q(a)(3) or (4) for each metric ton of qualified carbon oxide which is captured by the taxpayer using carbon capture equipment which is originally placed in service at a qualified facility on or after February 9, 2018. These final regulations provide that the election will apply to all metric tons of qualified carbon oxide captured by the taxpayer at the qualified facility for the full 12-year credit period.

Section 45Q(f)(6)(A) provides that for any taxable year in which an applicable facility captures not less than 500,000 metric tons of qualified carbon oxide, the person described in section 45Q(f)(3)(A)(ii) may elect to have such applicable facility, and any carbon capture equipment placed in service at such applicable facility, deemed as having been placed in service on February 9, 2018. The term “applicable facility” means a qualified facility (i) which was placed in service before February 9, 2018, and (ii) for which no taxpayer claimed a section 45Q credit for any taxable year ending before February 9, 2018.

Section 45Q(f)(7) provides that in the case of any taxable year beginning in a calendar year after 2009, there is substituted for each dollar amount contained in section 45Q(a)(1) and (2) an amount equal to the product of (i) such dollar amount, multiplied by (ii) the inflation adjustment factor for such calendar year determined under section 43(b)(3)(B) for such calendar year, determined by substituting “2008” for “1990.”

Section 45Q(g) provides that in the case of any carbon capture equipment placed in service before February 9, 2018, the section 45Q credit applies with respect to qualified carbon oxide captured using such equipment before the end of the calendar year in which the Secretary of the Treasury or his delegate (Secretary), in consultation with the Administrator of the Environmental Protection Agency (EPA), certifies that a total of 75,000,000 metric tons of qualified carbon oxide have been taken into account in accordance with former section 45Q(a) (as in effect before February 9, 2018) and sections 45Q(a)(1) and (2).

The proposed regulations restated the statutory credit amounts. Commenters did not request changes to the proposed regulations regarding the statutory amounts. Therefore, these final

regulations adopt the amounts in the proposed regulations.

Regarding the 75,000,000 metric ton cap on the amount of qualified carbon oxide that may be taken into account under sections 45Q(a)(1) and (a)(2), commenters inquired as to whether the cap should be adjusted to account for claimed section 45Q credits that are subsequently disallowed. Section 45Q credits that are subsequently disallowed are added back to the pool of available metric tons, and are reflected in the yearly notices in which the IRS publishes the carbon oxide sequestration credit inflation adjustment factor and the amount of qualified carbon oxide that has been taken into account by taxpayers during the year. The most recent notice is Notice 2020–40, 2020–25 I.R.B. 952. Once the 75,000,000 metric ton cap has been reached, the IRS will publish a notice certifying that the cap has been reached.

A commenter suggested that the final regulations clarify who can make the election under section 45Q(f)(6) to treat applicable facilities as placed in service on the date of enactment of the BBA, by revising § 1.45Q–2(g)(4) of the proposed regulations to state the definition of the attributable taxpayer, rather than cross referencing to section 45Q(f)(3)(A)(ii) and § 1.45Q–1(h)(1). Because the commenter’s suggested clarification improves the readability of the regulations, § 1.45Q–2(g)(4) has been revised to specifically refer to the person that owns the carbon capture equipment and physically or contractually ensures the capture and disposal, injection or utilization of such qualified carbon oxide as the person who can make the election under section 45Q(f)(6).

A commenter recommended that the final regulations clarify what constitutes a single applicable facility for purposes of making an election under section 45Q(f)(6). The commenter referred to section 8.01(1) of Notice 2020–12, which sets out factors indicating that multiple qualified facilities or units of carbon capture equipment are operated as part of a single project for purposes of determining whether construction of a qualified facility or carbon capture equipment has begun for purposes of the section 45Q credit. The commenter noted that these rules do not apply to the section 45Q(f)(6) election, and suggested that they provide a very useful methodology for determining whether carbon capture operations should be aggregated for purposes of section 45Q(f)(6). The final regulations allow taxpayers to apply the rules of section 8.01 of Notice 2020–12 to treat multiple facilities as a single facility for

purposes of whether a facility satisfies the requisite annual carbon oxide capture thresholds described in section 45Q(d)(2), and, therefore, is a qualified facility. Because a section 45Q(f)(6) election applies to a qualified facility that must meet a similar carbon oxide capture threshold, the final regulations adopt this comment.

B. Contractually Ensuring Capture and Disposal, Injection, or Utilization of Qualified Carbon Oxide

Section 45Q(f)(3)(A)(i) provides that 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 section 45Q credit is attributable to the person that captures and physically or contractually ensures the disposal through secure geological storage, use for tertiary injection and disposal through secure geological storage, or utilization in a manner consistent with section 45Q(f)(5).

Section 45Q(f)(3)(A)(ii) provides that 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 section 45Q credit is attributable to the person that owns the carbon capture equipment and physically or contractually ensures the capture and disposal, injection, or utilization of such qualified carbon oxide.

The proposed regulations provided a framework for the types of contracts, terms, and reporting requirements that will demonstrate the contractual assurance of the capture and disposal, injection, or utilization of qualified carbon oxide. The proposed regulations also provided that a taxpayer may enter into multiple contracts with multiple parties for the disposal, injection, or utilization of qualified carbon oxide. For example, a taxpayer that captures qualified carbon oxide may contract with one party to dispose of a portion of its captured qualified carbon oxide in a deep saline formation, with another party to use another portion of its captured qualified carbon oxide as a tertiary injectant in multiple enhanced oil recovery (EOR) sites, and with several parties to utilize the remaining portion of its captured qualified carbon oxide. The existence of each contract and the parties involved must be reported to the IRS on an annual basis on *Form 8933*, "Carbon Oxide Sequestration Credit." For purposes of this Summary of Comments and Explanation of Revisions section, a reference to *Form 8933* includes any

successor form(s), pursuant to instructions to any of the foregoing (see § 601.602 of this chapter), or other guidance.

The proposed regulations provided that for contracts for the disposal of qualified carbon oxide or use of qualified carbon oxide as a tertiary injectant in enhanced oil or natural gas recovery, the following information must be included: Identifying information (name of operator, field, unit and reservoir), the location (county and state) and the identification number assigned to the facility by the EPA's electronic Greenhouse Gas Reporting Tool (e-GGRT ID number).

The final regulations provide more details regarding the requirements of both parties to a contract for the disposal of qualified carbon oxide or use of qualified carbon oxide as a tertiary injectant in enhanced oil or natural gas recovery. Specifically, the failure of the taxpayer claiming the credit to satisfy this reporting requirement in a taxable year will result in the inability of that taxpayer to claim the credit with respect to any qualified carbon oxide that is disposed of, injected, or utilized in that taxable year pursuant to that particular contract.

1. Binding Written Contract

The proposed regulations required taxpayers to contractually ensure the disposal, injection, or utilization of qualified carbon oxide in a binding written contract that includes commercially reasonable terms that provide for enforcement. The proposed regulations provided that taxpayers may include information regarding the amount of qualified carbon oxide the parties agree to dispose of, inject, or utilize in their contracts. Contracts may also include other specific provisions relating to enforcement, such as long-term liability provisions, indemnity provisions, or penalties for breach of contract or liquidated damages. While the proposed regulations required that the contract include a mechanism for enforcement, no specific enforcement-related provision or other particular kind of enforcement provision was mandated.

Under the proposed regulations, a taxpayer did not elect to allow all or a portion of the section 45Q credit to any of the contracting parties merely by contracting with that party to ensure the disposal, injection, or utilization of qualified carbon oxide. Any election to allow all or a portion of the credit to another taxpayer was required to be made separately in the manner provided in the proposed regulations. See Election to Allow the Credit to Another

Taxpayer in section II.C. of this Summary of Comments and Explanation of Revisions.

In response to the proposed regulations, commenters requested that the Treasury Department and the IRS clarify which contract provisions are necessary to contractually ensure the capture and disposal, injection, or utilization of qualified carbon oxide. Several commenters requested broad guidance on commercially reasonable terms rather than specifying exact language. One commenter requested guidance regarding the assurance of capture, remedies, guarantees, and the prevention of leakage.

Further, commenters recommended that the final regulations harmonize the permission for liquidated damages in § 1.45Q-1(h)(2)(iii)(B) of the proposed regulations and the exclusion of contracts that limit damages to a specified amount in § 1.45Q-1(h)(2)(i) of the proposed regulations. To further the goal of harmonizing the conflicting provisions, commenters recommended that the words "and does not limit damages to a specified amount" in § 1.45Q-1(h)(2)(i) of the proposed regulations be excluded from the final regulations, or the final regulations should include language from section 8.02 of Notice 2020-12 that provides that 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.

The final regulations harmonize the conflicting provisions regarding liquidated damages by replacing the definition of binding written contract in § 1.45Q-1(h)(2)(i) of the proposed regulations with the definition of binding written contract in section 8.02(1) of Notice 2020-12 and § 1.168(k)-1(b)(4)(ii)(A)-(D).

2. Multiple Binding Written Contracts Permitted

A commenter noted that while § 1.45Q-1(h)(2)(ii) of the proposed regulations permitted a taxpayer to enter into multiple binding written contracts with multiple parties for disposal, injection, or utilization of the qualified carbon oxide, the proposed regulations failed to address the possibility that a sequestration party may enter into a binding written contract with more than one party that owns carbon capture equipment or captures or ensures the capture of qualified carbon oxide. The commenter suggested adding the following clarifying language to § 1.45Q-1(h)(2)(ii): "A party that physically carries out the disposal, injection, or utilization of qualified

carbon oxide may enter into multiple binding written contracts with multiple parties that own carbon capture equipment to capture or contractually ensure the capture of qualified carbon oxide.” The final regulations adopt the commenter’s clarification.

3. Contract Provisions

A commenter suggested that § 1.45Q–1(h)(2) of the proposed regulations be revised to clarify that the owner of carbon capture equipment is not required to physically carry out the capture of qualified carbon oxide to claim the section 45Q credit as long as the owner contractually ensures that the party that physically carries out the capture satisfies the requirements of the regulations. The commenter’s suggestion is consistent with section 45Q(f)(3)(ii), which applies to qualified carbon oxide captured using carbon capture equipment which is originally placed in service at a qualified facility on or after February 9, 2018. Section 45Q(f)(3)(ii) requires the person that owns the carbon capture equipment to physically or contractually ensure the capture of the qualified carbon oxide. However, the commenter’s suggestion is inconsistent with section 45Q(f)(3)(i), which applies to qualified carbon oxide captured using carbon capture equipment that is originally placed in service at a qualified facility before February 9, 2018. Section 45Q(f)(3)(i) requires the person that owns the carbon capture equipment to capture the qualified carbon oxide. Unlike section 45Q(f)(3)(ii), section 45Q(f)(3)(i) does not include “or contractually ensures the capture.” Therefore, the final regulations adopt the commenter’s suggestion for qualified carbon oxide captured using carbon capture equipment which is originally placed in service at a qualified facility on or after February 9, 2018, but not for qualified carbon oxide captured using carbon capture equipment which is originally placed in service at a qualified facility before February 9, 2018.

Commenters sought clarification that taxpayers may employ a chain of contracts or contractual assurances with subcontractors to ensure disposal, injection, or utilization. Many commenters requested revising § 1.45Q–1(h)(2) of the proposed regulations and the examples thereunder to provide that direct privity of contract is not required between the taxpayer to which the credit is attributable (the carbon capture equipment owner) and the party that performs the disposal, injection, or utilization of qualified carbon oxide, as long as there is a chain of contractual privity ultimately connecting those

parties and satisfying the requirements of the regulation. Similarly, several commenters requested clarification that a taxpayer can satisfy the “contractual assurance” requirement through a single offtake contract with a counterparty who contractually assures the disposal, injection, or utilization of qualified carbon oxide through one or more levels of subcontractors.

The final regulations provide that a taxpayer may enter into a binding written contract with a general contractor that hires subcontractors to physically carry out the capture, disposal, injection, or utilization of the qualified carbon oxide, but the contract must bind the subcontractors to the requirements of § 1.45Q–1(h)(2). The final regulations also permit multiple binding written contracts. Further, as long as all the requirements of § 1.45Q–1(h)(2) are met, parties to these contracts may be related.

One commenter requested that the final regulations include a rule that parties to a contract that contractually assures the disposal, injection, or utilization of qualified carbon oxide for the taxpayer may be commonly owned or controlled or otherwise have some overlapping ownership relationship. Neither the statute, the proposed regulations, nor these final regulations prevent such relationships. The contracts simply must conform to all of the requirements of these final regulations.

4. Pre-Existing Contracts

A commenter requested that the final regulations provide that an amendment of a contract is unnecessary to meet the requirements of the regulation as long as there is a unilateral undertaking, such as side letter or certification, that meets the terms required by proposed regulations. The determination of whether an amendment of a contract is binding depends on whether the amendment is enforceable under State law against both the taxpayer and the party that physically carries out the disposal, injection, or utilization of qualified carbon oxide. Therefore, the final regulations do not adopt this commenter’s request.

Commenters requested that existing contracts should be grandfathered from the requirements of § 1.45Q–1(h)(2) of the proposed regulations and treated as providing contractual assurance until new contracts that include conforming provisions are executed. Commenters presented alternative definitions of “existing contracts,” such as “pre-BBA contracts and contracts signed before the date the final regulations are promulgated.”

In response to these commenters, the final regulations provide taxpayers who have existing contracts that were signed before the date these final regulations are published in the **Federal Register** additional time to conform their contracts to the requirements of § 1.45Q–1(h)(2). To be eligible for the section 45Q credit, taxpayers must execute new contracts or amend existing contracts so as to conform to all of the requirements of these final regulations by July 12, 2021.

C. Election To Allow the Credit to Another Taxpayer

Section 45Q(f)(3)(B) provides that a person that is entitled to claim the credit under section 45Q(f)(3)(A)(i) or section 45Q(f)(3)(A)(ii) may elect to allow the person that disposes of the qualified carbon oxide, utilizes the qualified carbon oxide, or uses the qualified carbon oxide as a tertiary injectant to claim the section 45Q credit (section 45Q(f)(3)(B) election).

The proposed regulations provided guidance regarding who may make a section 45Q(f)(3)(B) election and the time and manner for making a section 45Q(f)(3)(B) election. The proposed regulations also provided that section 45Q(f)(3)(B) elections must be made on an annual basis no later than the time prescribed by law (including extensions) for filing the Federal income tax return or Form 1065, U.S. Return of Partnership Income, and may not be made on an amended Federal income tax return. However, the proposed regulations provided that a section 45Q(f)(3)(B) election may be made on an amended Federal income tax return, an amended Form 1065 or an administrative adjustment request under section 6227 of the Code (AAR), for any taxable year ending after February 9, 2018, but not for taxable years beginning after June 2, 2020. In addition, as provided in Revenue Procedure 2020–23, 2020–18 I.R.B. 749, the exception applies regarding the time to file an amended return by a partnership subject to the centralized partnership audit regime enacted as part of the BBA (BBA partnership) for the 2018 and 2019 taxable years. The amended Federal income tax return or the amended Form 1065 must be filed, in any event, not later than the applicable period of limitations on assessment for the taxable year for which the amended Federal income tax return or Form 1065 is being filed. A BBA partnership may make a late election by filing an AAR on or before October 15, 2021, but in any event, not later than the period of limitations on filing an AAR under section 6227(c).

The proposed regulations also set forth information to be provided as part of a section 45Q(f)(3)(B) election, requiring both an electing taxpayer and a credit claimant to include a Form 8933 with its timely filed Federal income tax return or Form 1065 (including extensions) as applicable. The proposed regulations required an electing taxpayer to provide each credit claimant with a copy of the electing taxpayer's Form 8933, and each credit claimant must attach that copy of the electing taxpayer's Form 8933 to its own Form 8933.

Further, the proposed regulations provided that section 45Q(f)(3)(B) elections may be made for all or a portion of the available section 45Q credit and may be made for one or more credit claimants. If an electing taxpayer elects to allow multiple credit claimants to claim section 45Q credits, the proposed regulations provided that the maximum amount of section 45Q credits allowable to each credit claimant is proportional to the amount of qualified carbon oxide disposed of, utilized, or used as a tertiary injectant by the credit claimant.

1. Parties Eligible To Qualify as Credit Claimants

Commenters sought clarification concerning whether elections could be made for several parties along a contractual chain, or whether only the end disposer, injector, or utilizer would qualify as credit claimants. The commenters supported permitting the electing taxpayers to retain a portion of the credit and allow portions of the credit to various intermediaries, as well as the end disposer, injector, or utilizer.

The final regulations provide that the disposer, injector, or utilizer that enters into the contract with the electing taxpayer for the disposal, injection, or utilization of the electing taxpayer's qualified carbon oxide is the party that may qualify as a credit claimant pursuant to a section 45Q(f)(3)(B) election. If such disposer, injector, or utilizer enters into a subcontract with a third-party to carry out the disposal, injection, or utilization, then the subcontractor may not be a credit claimant. This is consistent with the provisions in these final regulations relating to contractual assurance under section 45Q(f)(3)(ii) that allow a third party who hired subcontractors to contract directly with the carbon capture equipment owner and also be allowed to subcontract the physical disposal, injection, or utilization of qualified carbon oxide through one or more levels of subcontractors, and is premised on the fact that the third party

who hired subcontractors is the party that has contractual privity with the attributable taxpayer for the disposal, injection, or utilization of the qualified carbon.

2. Failure To Satisfy Reporting Requirements

A commenter recommended that the credit allowable under section 45Q should not be jeopardized by a counterparty (the person physically disposing, injecting or utilizing) failing to meet the reporting requirements under § 1.45Q-1(h)(2)(iv) of the proposed regulations, noting that the proposed regulations do not provide what happens if a counterparty fails to report the required information. The commenter suggested that the failure of a counterparty to meet the reporting requirements under § 1.45Q-1(h)(2)(iv) of the proposed regulations should not affect whether a compliant taxpayer is entitled to section 45Q credits.

The final regulations require both parties to a contract to report their contract information to the IRS on a Form 8933, and also require the party that contracts with the taxpayer claiming the section 45Q credit (counterparty) to provide that taxpayer with a copy of its Form 8933. The taxpayer claiming the section 45Q credit must attach and file the Form 8933 received from the counterparty to its own signed Form 8933. If the taxpayer claiming the section 45Q credit fails to satisfy this reporting requirement, then that taxpayer may not claim the section 45Q credit. Permitting a section 45Q credit to a taxpayer that fails to meet its applicable reporting requirements would undermine tax administration. However, the failure of the counterparty to file its Form 8933 with the IRS will not impact the ability of the taxpayer to claim the section 45Q credit.

Commenters sought to clarify whether a minimum amount of tonnage or credit would be required to make a section 45Q(f)(3)(B) election, and whether the election would be limited to either whole tons, whole dollars, or the minimum capture requirements based on the type of qualified facility.

The final regulations do not limit the election to whole metric tons or whole dollars. Because the value of the pre-BBA credit is based on an annual inflation adjustment, and the post-BBA credit is based on linear interpolation until arriving at the \$35 and \$50 values, limiting an election to whole metric tons or whole dollars would improperly distort the value of the credit in certain instances. The final regulations place minimum capture requirements on the owner of the carbon capture equipment

to be considered a qualified facility, but do not impose such requirements on the credit claimant, which is the party that disposes, uses, or utilizes the qualified carbon oxide.

D. Timing of Credit—Placed in Service Date

A commenter suggested that the twelve-year credit period should not begin until the disposal, injection, or utilization operations are active and a sequestration plan is in place. Therefore, the commenter suggested that the twelve-year period should begin on the later of February 9, 2018, and the date the MRV plan is approved or the ISO plan is certified. Section 45Q(a)(3) and (4) clearly provides that the 12-year credit period begins on the date the carbon capture equipment was originally placed in service. Therefore, the final regulations do not adopt the commenter's suggestion.

A commenter proposed that taxpayers be allowed to treat the placed in service date as (1) the date the facility (or specific unit of carbon capture equipment) is capable of being placed in service, even if the facility or the carbon capture equipment is not fully operable on that date; or (2) the earlier of the conclusion of a 180-day ramp-up period or the date upon which the facility or carbon capture equipment at the facility is fully operable.

The final regulations do not alter the placed in service standard provided in other guidance, but instead apply the placed in service standard consistent with existing guidance. The current standard is clear, and applying the same standard should provide clarity to taxpayers and avoid the confusion of having multiple standards.

III. Definitions

A. Qualified Carbon Oxide

Section 45Q(c) provides that "qualified carbon oxide" means (A) any carbon dioxide which (i) is captured from an industrial source by carbon capture equipment which is originally placed in service before February 9, 2018; (ii) would otherwise be released into the atmosphere as industrial emission of greenhouse gas 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) any carbon dioxide or other carbon oxide which (i) is captured from an industrial source by carbon capture equipment which is originally placed in service on or after February 9, 2018; (ii) would otherwise be released into the atmosphere as industrial emission of greenhouse gas 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 carbon dioxide which (i) is captured directly from ambient air; and (ii) is measured at the source of capture and verified at the point of disposal, injection, or utilization.

While “qualified carbon oxide” includes the initial deposit of captured carbon oxide used as a tertiary injectant, section 45Q(c)(2) provides that the term does not include carbon oxide that is recaptured, recycled, and re-injected as part of the qualified enhanced oil or natural gas recovery process. Additionally, section 45Q(f)(1) provides that the section 45Q credit applies only with respect to qualified carbon oxide the capture and disposal, injection, or utilization of which is within the United States (within the meaning of section 638(1)), or a possession of the United States (within the meaning of section 638(2)).

The proposed regulations generally conformed to the statutory definition of qualified carbon oxide, including the provision that only qualified carbon oxide captured and disposed of, injected, or utilized within the United States or a possession of the United States is taken into account.

One commenter requested that the final regulations explicitly state that because carbon dioxide is fungible, carbon dioxide transported or stored in shared pipelines or facilities meets the definition of qualified carbon oxide in § 1.45Q–2(a) of the proposed regulations, so long as the amount of carbon dioxide (as opposed to the particular molecules) is measured at the source of capture and verified at the point of disposal, injection, or utilization.

The International Organization for Standardization (ISO) standard for carbon dioxide capture, transportation, and geological storage has been endorsed by the American National Standards Institute (ANSI) and the CSA Group (CSA). CSA/ANSI ISO 27916:2019, “Carbon Dioxide Capture, Transportation and Geological Storage—Carbon Dioxide Storage Using Enhanced Oil Recovery (CO₂-EOR) (hereafter referred to as CSA/ANSI ISO 27916:2019) was developed for the purpose of quantifying and documenting the total carbon dioxide that is stored in association with EOR. In general, reporting under CSA/ANSI ISO 27916:2019 uses mass balance accounting, has established reporting and documentation requirements, and includes requirements for documenting

a monitoring program and a containment assurance plan.

Subpart RR and CSA/ANSI ISO 27916:2019 both provide for methods of accounting for qualified carbon oxide, expressly providing for mass balance accounting, which recognizes the fungibility of carbon dioxide. Because this guidance addresses the fungibility issue, the recommended change is unnecessary, and the final regulations do not adopt this comment.

A commenter suggested that based on the plain language of the statute, only carbon dioxide and carbon monoxide may satisfy the definition of qualified carbon oxide for purposes of qualifying for the credit, and that other greenhouse gases that may be included as part of a lifecycle analysis should not be eligible for the credit. However, another commenter stated that because of the methodology for preparing a lifecycle analysis for utilization provided in section 45Q(f)(5)(B)(i) and (ii), all greenhouse gases should be eligible for section 45Q credits as carbon dioxide equivalents.

Section 45Q(c) clearly provides that only carbon dioxide or other carbon oxide may be qualified carbon oxide. The section 45Q credit may be calculated only on the amount of qualified carbon oxide that is captured and utilized. Section 45Q makes this clear in a number of instances. The final regulations provide that the amount of the section 45Q credit is not computed on all greenhouse gases, but is based only on qualified carbon oxide measured at the source of capture and utilized. See section IV.A. of this Summary of Comments and Explanation of Revisions for a detailed explanation regarding lifecycle analysis and the amount utilized.

A commenter requested that the final regulations recognize that both subpart RR and the ISO standard do not apply to any carbon oxide other than carbon dioxide (e.g., carbon monoxide). Because the section 45Q credit is computed on the total volume of qualified carbon dioxide and any other carbon oxide captured and disposed of, injected, or utilized in the tax year, and the ISO standard and subpart RR are made applicable to section 45Q pursuant to these final regulations for purposes of establishing secure storage and monitoring standards, rather than defining carbon oxide, the final regulations do not adopt the commenter’s request.

A commenter suggested that § 1.45Q–2(h)(5) of the proposed regulations, which provides that carbon oxide that is injected into an oil reservoir that is not a qualified enhanced oil recovery

project under section 43(c)(2) cannot be treated as qualified carbon oxide unless the reservoir permanently ceased oil production, the operator has obtained an Underground Injection Control Class VI permit, and the operator complies with 40 CFR part 98 subpart RR, conflicts with section 45Q(c), which defines qualified carbon oxide. The commenter proposed that the provision be revised as follows:

Carbon oxide that is injected into an oil reservoir that is not a qualified enhanced oil recovery project under section 43(c)(2) cannot be treated as qualified carbon oxide, disposed of, injected, or utilized. This rule will not apply to an oil reservoir if (i) The reservoir permanently ceased oil production; (ii) The operator has obtained an EPA Underground Injection Control class VI permit; and (iii) The operator complies with 40 CFR part 98 subpart RR.

This suggested revision removes the requirement to timely file a petroleum engineer’s inspection, which the final regulations retain on the grounds of uniformity and transparency. In addition, the revision removes the provision for the first injection occurring before 1991, which the final regulations retain to comport with section 43. Further, section 45Q(c)(1)(A)(iii), (B)(iii), and (C)(iii) takes into account the end use of qualified carbon oxide when determining which volumes constitute qualified carbon oxide. Accordingly, the final regulations do not adopt the commenter’s suggestion.

B. Carbon Capture Equipment

Section 45Q does not define carbon capture equipment. The proposed regulations provided that in general, carbon capture equipment includes all components of property that are used to capture or process carbon oxide until the carbon oxide is transported for disposal, injection, or utilization. Further, the proposed regulations listed specific uses for the equipment, as well as items that are included in, or excluded from, the definition of carbon capture equipment. Components of property related to the function of capturing carbon oxides, such as components of property necessary to compress, treat, process, liquefy, or pump carbon oxides, are included within the definition of carbon capture equipment. Components of property related to transporting carbon oxides for disposal, injection, or utilization are not included in the general definition.

1. General Comments

Several commenters asserted that the definition of carbon capture equipment in the proposed regulations at § 1.45Q–

2(c) is overbroad. Commenters generally requested alternative definitions or tests to determine whether equipment is considered carbon capture equipment for section 45Q purposes.

One commenter suggested deleting the list of carbon capture equipment components in proposed regulation § 1.45Q-2(c)(2) as it results in more confusion in practice. Similarly, another commenter suggested deleting the proposed regulation § 1.45Q-2(c)(3) list of “excluded components” as it causes confusion.

A commenter suggested that the following components should be included in the list of carbon capture equipment: Pressure and temperature swing adsorption units, absorbers and regenerators, columns, storage tanks, and vaporizers, biogas compression equipment, equipment used for the primary purpose of removing compounds other than carbon oxide from biogas or biomethane, and biomethane compression equipment.

A commenter recommended defining carbon capture equipment as equipment that is placed in service at a qualified facility and that performs the function of, or is used for the purpose of, capturing qualified carbon oxide from an industrial source, or in the case of a direct air capture facility, directly from the ambient air.

Another commenter recommended revising the list of excluded components to exclude land and marine transport vessels used for transporting captured qualified carbon oxide for disposal, injection, or utilization. The commenter also recommended excluding pipelines and branch lines, except where they are part of a gathering and distribution system that collects carbon oxide captured from a qualified facility or multiple facilities that constitute a single project and are used to transport that carbon oxide away from the qualified facility or single project to a pipeline that transports carbon oxide from multiple taxpayers or projects.

In response to these comments, the final regulations provide that carbon capture equipment generally includes all components of property that are used to capture or process carbon oxide until the carbon oxide is transported for disposal, injection, or utilization. The final regulations also remove the list of qualifying carbon capture components and the excluded components. Further, the final regulations provide that carbon capture equipment generally does not include components of property used for transporting qualified carbon oxide for disposal, injection, or utilization. However, the final regulations provide that carbon capture equipment includes

a system of gathering and distribution lines that collect carbon oxide captured from a qualified facility or multiple qualified facilities that constitute a single project (as described in section 8.01 of Notice 2020-12). These revisions provide a functionality-based definition of carbon capture equipment, and provide flexibility without limiting the definition of carbon equipment solely to a list of components, which caused confusion in the proposed regulations.

2. Primary Purpose Test

Commenters requested that the final regulations provide a primary purpose test to distinguish between equipment for which the primary function is the separation of qualified carbon oxide and equipment that incidentally separates qualified carbon oxide but for which the primary function is the manufacture of other products. One commenter elaborated that only equipment whose primary purpose is to capture, process, separate, purify, dry or compress qualified carbon oxide should be treated as carbon capture equipment. Another commenter requested that the final regulations clarify that only additional equipment, installed with the primary purpose to separate and capture qualified carbon oxide in a manner such that carbon oxide is of suitable quality for transport, disposal, and utilization, be treated as carbon capture equipment.

Commenters suggested that the definition of carbon capture equipment consider whether the equipment is integral to the industrial facility. The commenters suggested that any equipment that is integral to the industrial facility would be part of the industrial facility and equipment that is not necessary for the functioning of the industrial facility that captures, processes, separates, purifies, dries or compresses qualified carbon oxide should be considered carbon capture equipment.

A commenter requested that § 1.45Q-2(c) of the proposed regulations be revised to clarify that in the context of a biogas processing facility, carbon capture equipment is limited to the equipment used for the primary purpose of separating and capturing or processing qualified carbon oxide until the qualified carbon oxide is transported for disposal, injection or utilization.

3. Dual Use Property

Commenters requested clarification of the definition of carbon capture equipment in the case of a dual purpose facility that produces gases suitable for process usage and qualified carbon oxide as a by-product. The commenters noted that the definition of carbon

capture equipment under the proposed regulations did not differentiate between dual purpose equipment that is tied to both an industrial process not related to carbon capture and to carbon capture as defined by the proposed regulations. Consequently, the commenters recommended that the final regulations allow a taxpayer to treat the two types of systems differently when the taxpayer owns both the dual purpose industrial process units and the downstream components that only serve a carbon capture function, and that taxpayers should be permitted to elect to exclude such dual purpose equipment from the definition of carbon capture equipment.

The commenters stated that a bright-line distinction between the two types of equipment is supported by the definition of carbon capture equipment in the proposed regulations and the underlying intent of section 45Q, and that a component of industrial equipment that is essential to the production of chemicals normally is not considered to be carbon capture equipment. Further, the commenters noted difficulties for tax equity partnerships if they are required to own manufacturing equipment in addition to carbon capture equipment. Therefore, these commenters recommended applying a primary purpose test to define carbon capture equipment, which differentiates between equipment that primarily functions to separate qualified carbon oxide and equipment that incidentally separates qualified carbon oxide, but primarily functions to manufacture other products.

The final regulations do not adopt a primary purpose test, and do not allow taxpayers to elect to exclude “dual purpose” property from the definition of carbon capture equipment. Instead, the final regulations provide a functionality-based definition of carbon capture equipment and remove the lists of specific items of included components and excluded components. Specifically, and as discussed in section III.B.1. of this Summary of Comments and Explanation of Revisions, the final regulations provide that carbon capture equipment generally includes all components of property that are used to capture or process carbon oxide until the carbon oxide is transported for disposal, injection, or utilization. Further, the final regulations provide that carbon capture equipment generally does not include components of property used for transporting qualified carbon oxide for disposal, injection, or utilization.

4. Unit of Property: Independently Functioning Process Train

Commenters requested that the definition of carbon capture equipment be revised to clarify that all components that make up an independently functioning process train capable of capturing, processing, and preparing carbon oxide for transport should be treated as one unit of carbon capture equipment, consistent with the single project rule in Revenue Ruling 94–31, 1994–1 C.B. 16, 1994–21 I.R.B. 4. A commenter requested that the regulations clarify that at a single industrial facility there can be two or more pieces of carbon capture equipment and that the owner of a component of carbon capture equipment is separately eligible to claim credits.

The final regulations clarify that all components that make up an independently functioning process train capable of capturing, processing, and preparing carbon oxide for transport should be treated as one unit of carbon capture equipment. This clarification is consistent with the single project rule provided in Revenue Ruling 94–31.

5. Safe Harbor

One commenter requested a safe harbor to determine whether a component is considered carbon capture equipment based on the level of qualified carbon oxide in the gas stream entering the piece of equipment. The commenter suggested that carbon capture equipment could include all equipment from the point where the gas stream is 90 percent carbon oxide to the point where the carbon oxide is transported for end use. The commenter recommended that the final regulations clarify the interaction of §§ 1.45Q–2(c) and 1.45Q–2(c)(1) of the proposed regulations consistent with a primary purpose test and the proposed safe harbor.

The final regulations do not adopt this recommendation. Establishing which components within a carbon capture, utilization, or storage process consistently contain a gas stream of 90 percent qualified carbon oxide (by volume) would require a significant expenditure for monitoring and compliance that would put small businesses at a disadvantage.

6. Ownership Issues

Many commenters requested that the final regulations clarify that carbon capture equipment may be owned by a taxpayer other than the taxpayer that owns the qualified facility at which the carbon capture equipment is placed in service. In response, the final

regulations clarify that carbon capture equipment that is originally placed in service at a qualified facility on or after February 9, 2018, may be owned by a taxpayer other than the taxpayer that owns the industrial facility at which the carbon capture equipment is placed in service. However, this clarification does not extend to credits granted under section 45Q(a)(1) and (2), which require carbon capture equipment that is originally placed in service at a qualified facility before February 9, 2018.

Commenters recommended that the final regulations provide rules regarding ownership of carbon capture equipment by multiple taxpayers, which respect an allocation agreed to by the parties and, in the absence of such agreement, which provide for a pro rata allocation based on the equipment's contribution to increased carbon oxide capture, for taxpayers to be on firm footing when negotiating the scope and terms of any election under section 45Q(f)(3)(B).

A commenter recommended that the final regulations clarify that at a single industrial facility, two or more taxpayers can own an undivided interest in the same carbon capture equipment. In such circumstance, each owner should be eligible to claim section 45Q credits in an amount equal to the arm's-length negotiated qualified carbon oxide allocated to the owner. One commenter requested that the final regulations clarify that where multiple taxpayers own different components within the same industrial facility, the taxpayer owning the majority by value should claim the credit.

The final regulations do not provide specific rules regarding how to allocate any section 45Q credits generated by carbon capture equipment that captures qualified carbon oxide among multiple taxpayers that own different components within a carbon capture system or an undivided interest in the same carbon capture equipment. Allowing the credit to be shared in this manner will generate significant administrative burden for the IRS. Accordingly, for each single process train of carbon capture equipment, only one taxpayer will be permitted to claim the section 45Q credit, and it will be the taxpayer who either physically ensures the capture and disposal, injection, or utilization of qualified carbon oxide or contracts with others who capture and dispose of, inject, or utilize qualified carbon oxide. However, multiple owners of carbon capture equipment may form a partnership to allocate section 45Q credits among themselves pursuant to Revenue Procedure 2020–12.

7. Characterization of Specific Components as Carbon Capture Equipment

A commenter requested confirmation, through an example or a safe harbor, that the person that owns both an absorber unit and regeneration unit (or their functional equivalents) is treated as the sole “person that owns the carbon capture equipment” for section 45Q(f)(3)(A)(ii). A commenter requested clarification that for a project in which the carbon capture equipment owner also owns the pipeline for transporting the qualified carbon oxide that the pipeline should be included in the definition of carbon capture equipment because it is an essential aspect of the carbon capture process.

The final regulations remove the list of included and excluded carbon capture equipment components, which caused confusion among commenters. In addition, the final regulations do not include language discussing whether the owner of specific components of carbon capture equipment is treated as the sole owner. Regarding pipelines, the final regulations provide that carbon capture equipment generally does not include components of property used for transporting qualified carbon oxide for disposal, injection, or utilization.

C. Qualified Facility

Section 45Q(d) provides that “qualified facility” means any industrial facility or direct air capture facility, the construction of which begins before January 1, 2026, and (i) the construction of carbon capture equipment begins before such date; or (ii) the original planning and design for such facility includes installation of carbon capture equipment. In addition, a qualified facility must capture: (i) In the case of a facility which emits not more than 500,000 metric tons of qualified carbon oxide into the atmosphere during the taxable year, not less than 25,000 metric tons of qualified carbon oxide during the taxable year which is utilized in a manner described in section 45Q(f)(5) (Section 45Q(d)(2)(A) Facility); (ii) in the case of an electricity generating facility which is not a Section 45Q(d)(2)(A) Facility (Section 45Q(d)(2)(B) Facility), not less than 500,000 metric tons of qualified carbon oxide during the taxable year; or (iii) in the case of a direct air capture facility or any facility which is not a Section 45Q(d)(2)(A) Facility or a Section 45Q(d)(2)(B) Facility, not less than 100,000 metric tons of qualified carbon oxide during the taxable year.

1. Original Planning and Design

A commenter requested that the final regulations provide a bright-line definition of “original planning and design” for purposes of section 45Q(d)(1). For example, the commenter suggested that at least one version of the engineering plans or designs for the facility (either issued for construction drawings or earlier version) should identify both the point where the carbon oxide would be captured, such as a tie-in point, and the physical location for the carbon capture equipment to be installed either in conjunction with the initial construction of the facility or at some later date. Because there is more than one possible interpretation of the term “original planning and design,” and a definition was not proposed in the proposed regulations, defining the term exceeds the scope of these final regulations, and these final regulations do not define the term.

2. 80/20 Rule

The proposed regulations included an “80/20 Rule,” which allowed a qualified facility or carbon capture equipment to qualify as originally placed in service even though it contains some used components of property, if the fair market value of the used components of property is not more than 20 percent of the total value of the qualified facility or carbon capture equipment. For purposes of the 80/20 Rule, the cost of a new qualified facility or carbon capture equipment includes all properly capitalized costs of the new qualified facility or carbon capture equipment. Solely for purposes of the 80/20 Rule, properly capitalized costs of a new qualified facility or carbon capture equipment may, at the option of the taxpayer, include the cost of new equipment for a pipeline owned and used exclusively by that taxpayer to transport carbon oxides captured from that taxpayer’s qualified facility that would otherwise be emitted into the atmosphere.

A. Timing of Determination

Several commenters suggested that the fair market value of the used equipment should be the replacement cost of the equipment less physical depreciation, and the appropriate valuation date should be the construction start date. These commenters further recommended that the final regulations provide that costs attributable to any disposal well used exclusively by the taxpayer as necessary for achieving the same underlying policy goals be included in the

denominator for purposes of the 80/20 Rule.

The 80/20 Rule has been used in both the section 48 investment tax credit and section 45 production tax credit contexts since the 1990s. Importantly, until the mid-2000s, energy property otherwise eligible for the section 48 credit and qualified facilities otherwise eligible for the section 45 credit were not eligible until they were placed in service. Over time, Congress has amended the section 45 and 48 credits to use a beginning of construction standard for credit eligibility while retaining some placed in service dates. However, the 80/20 Rule has survived and continues to be computed on the date that a facility is placed in service for the section 45 and 48 credits. The section 45Q credit is similar to the section 45 production tax credit. Allowing taxpayers to compute the 80/20 Rule on the beginning of construction date instead of the placed in service date, thereby reducing risk of loss during the years that construction may require, would unfairly favor one group of similarly situated taxpayers over another. Accordingly, the final regulations do not adopt this recommendation.

B. Methodology

A commenter recommended that the final regulations clarify that in determining the value of old or existing equipment compared to new equipment, the general principles of Revenue Ruling 94–31 should apply. Revenue Ruling 94–31 provides that a facility would qualify as originally placed in service even though it contains some used property, provided the fair market value of the used property is not more than 20 percent of the facility’s total value (the cost of the new property plus the value of the used property). The final regulations clarify that in determining the value of old or existing equipment as compared to new equipment, the general principles of Revenue Ruling 94–31 will apply.

C. Alternative Basis for Calculation

As previously mentioned, several commenters requested that the fair market value of used property for purposes of the 80/20 Rule be ascertained by determining the replacement cost of new property minus physical depreciation. One commenter requested that for purposes of the 80/20 Rule, the regulations refer to the used equipment’s capitalized costs (either depreciated or undepreciated) rather than its fair market value, or cap its fair market value (so determined for the used equipment at the aggregate

capitalized costs for the used equipment). Another commenter requested an alternative approach for facilities that cannot meet the 80/20 Rule, allowing facilities to allocate qualified carbon oxide according to the ratio of old/new equipment that constitutes the capture equipment process.

The final regulations do not incorporate these suggestions because they are inconsistent with the conventional understanding and use of the 80/20 Rule. Further, the regulations do not address the appropriate valuation method.

D. Previously Owned Equipment

A commenter suggested that carbon capture equipment that was used at a different industrial facility and is moved to the qualified facility should be treated as new property for purposes of the 80/20 Rule. One commenter sought clarification that if a taxpayer purchases used equipment from the marketplace, which the taxpayer itself had not previously placed in service, the equipment will qualify as new equipment (with a valued based on cost) for purposes of the 80/20 Rule. Another commenter requested that “New Components of Property” for purposes of the 80/20 Rule can include two categories of property: (1) Brand new property that has never been used before, and (2) Property that is used, so long as it was never used in connection with a qualified facility or carbon capture equipment for which a section 45Q credit was claimed (used-but-new property).

The final regulations do not adopt these suggestions. The position of the Treasury Department and the IRS has always been that the numerator of the 80/20 Rule is for new equipment, which does not include previously used equipment that is purchased by a taxpayer for use in a project. This has also been the Treasury Department’s and the IRS’s position for purposes of applying the 80/20 Rule for the section 45 credit, which is a production tax credit akin to the section 45Q credit.

E. Assets Included as Carbon Capture Equipment for Purposes of 80/20 Rule

Noting the concepts in the examples set forth in § 1.45Q–1(g)(4) of the proposed regulations, a commenter asked whether treating all components that make up an independently functioning process train could be considered for purposes of the 80/20 Rule, compared to applying the 80/20 Rule to the entire qualified facility. Another commenter asserted that the relevant unit of carbon capture

equipment is an independently functioning process train for purposes of the 80/20 Rule and the retrofitted carbon capture equipment rules, and requested that the final regulations reflect this assertion.

A commenter recommended that the final regulations clarify whether certain relevant items of equipment, including pressure and temperature adsorption units, adsorbers, and regenerators, columns, storage tanks, and vaporizers, are carbon capture equipment to inform whether and how the 80/20 Rule applies. A commenter suggested that the final regulations clarify that pipeline construction costs may be included for purposes of the 80/20 Rule.

A commenter requested modifications to the 80/20 Rule, suggesting that: (1) The exclusivity requirement be eliminated; (2) the qualified carbon oxides to be transported in the pipeline should be captured “by the taxpayer’s carbon capture equipment” and not “from the taxpayer’s qualified facility;” and (3) eliminating the limitation that the pipeline must only transport carbon oxide that “would otherwise be emitted into the atmosphere” because the limitation unfairly prejudices direct air capture facilities without justification or cost/benefit analysis. The commenter asserted that direct air capture facilities should be able to enjoy the benefits of this provision in the same way as industrial facilities.

The final regulations clarify that an independently functioning process train is the appropriate unit of carbon capture equipment for purposes of the 80/20 Rule, and clarify the meaning of “the cost of new equipment for a pipeline owned and used exclusively by that taxpayer.” However, the final regulations do not eliminate the exclusivity requirement for pipelines because the purpose of the 80/20 Rule is to calculate the fair market value ratio of new to used property within a project. If the taxpayer and the IRS are unable to determine how much of a pipeline the taxpayer actually owns or is part of the project, because it is a common carrier pipeline, the 80/20 Rule cannot be used to determine whether the project has met the test.

3. Electricity Generating Facility

A commenter requested that the final regulations clarify whether carbon capture equipment at a facility that is a combined heat and power system property (CHP) would be categorized as an electricity generating facility, particularly if the facility’s primary purpose is to provide steam and electric power to the industrial facilities where they are located, but sometimes sells

electricity to the grid. The commenter sought explicit guidance concerning whether a CHP facility emitting carbon oxides that primarily serve the steam and industrial load of the host industrial plant may be treated as an industrial facility that is subject to the “not less than 100,000 metric tons” requirement of section 45Q(d)(2)(C).

A commenter noted that it is unclear whether carbon capture equipment installed at a CHP is an electricity generating facility or an industrial facility. The commenter suggested that routine but de minimis sales of electricity to the grid could cause a CHP to be subject to depreciation under one of the MACRS classes listed in § 1.45Q–2(e) of the proposed regulations, thus triggering the 500,000 metric ton threshold applicable to carbon capture equipment installed at electric generating facilities in § 1.45Q–2(g)(1)(ii) of the proposed regulations. The commenter stated that many CHP facilities are small and do not produce 500,000 metric tons of carbon oxide annually, so this categorization could disqualify many otherwise attractive industrial CHP carbon capture projects from meeting the threshold for qualified facilities under § 1.45Q–2(g)(1)(ii) of the proposed regulations. Accordingly, the commenter requested guidance as to whether a CHP facility where the majority of carbon oxides emitted are attributable to serving the steam and industrial load of the host industrial plant may be treated as an industrial facility to which the “not less than 100,000 metric tons” threshold under section 45Q(d)(2)(C) applies.

A commenter sought clarification that the MACRS Asset Classes listed in the proposed regulations are the only categories in which a facility may be treated as an “electricity generating facility” and other more diverse or less clear facilities would not be at risk of being classified as such.

Based on the definition of electricity generating facility under § 1.45Q–2(e) of the proposed regulations, unless a facility is subject to depreciation under one of the listed MACRS asset classes, the facility does not qualify as an electricity generating facility. If the principal function of a power generation component of an industrial facility or direct air capture facility is to provide power for that facility, the definition provided in § 1.45Q–2(e) of the proposed regulations prevents the characterization of such an industrial facility or direct air capture facility as an electricity generating facility. The final regulations do not revise the MACRS asset categories listed in the proposed regulations. The categories

listed in the proposed regulations were generally supported by commenters, and the proposed regulations clearly indicated that only facilities subject to the listed MACRS asset classes are treated as electricity generating facilities for purposes of section 45Q.

4. Minimum Threshold Requirements—Direct Air Capture Facilities

A commenter supported the annualization of the first-year capture amounts described in § 1.45Q–2(g)(3) of the proposed regulations, but noted that this provision could be interpreted to be limited to only facilities that have “emissions” and possibly be inapplicable to direct air capture facilities. The commenter suggested that the language of the proposed regulations attempts to try to take into account not only the minimum capture amounts in § 1.45Q–2(g)(1)(ii) and (iii) of the proposed regulations, but also the maximum emission amounts in § 1.45Q–2(g)(1)(i) of the proposed regulations. Therefore, the commenter suggested that the provision should be clarified to apply to all facilities, including direct air capture facilities. The final regulations adopt this commenter’s suggestion.

A commenter recommended that the final regulations confirm that for purposes of meeting the section 45Q(d)(2) threshold levels for a qualified facility, all carbon oxide captured at an industrial facility or direct capture facility will be considered together, even if the carbon oxide will be subject to different levels of credits. The commenter explained that if some of the captured carbon oxide will be used for EOR and the remaining captured carbon oxide will immediately be disposed of in secure geological storage, then the total amount of captured carbon oxide should be aggregated for purposes of determining whether the facility meets the definition of a qualified facility.

The statute makes clear that the section 45Q(d)(2) threshold levels for a qualified facility look only to the amount of qualified carbon oxide captured. Taxpayers are permitted to consider all carbon oxide captured at an industrial facility or direct air capture facility together, even if the carbon oxide will be subject to different levels of credits. For example, if a taxpayer captures 100,000 metric tons of qualified carbon oxide and sends 50,000 metric tons to secure geological storage and 50,000 metric tons to enhanced oil recovery, the total 100,000 metric tons will qualify for the section 45Q credit at their respective credit values.

5. Aggregation

Many commenters requested that the final regulations allow taxpayers to aggregate carbon capture amounts from various facilities to meet the minimum capture requirements of section 45Q(d). The commenters generally recommended applying a test similar to the “single project” determination applicable for purposes of the beginning of construction requirements in Notice 2020–12. Section 8.01 of Notice 2020–12 allows for multiple facilities or units of carbon capture equipment that are operated as a single project to be treated as a single qualified facility or unit of carbon capture equipment for purposes of determining when construction began. Factors indicating that multiple qualified facilities or units of carbon capture equipment are operated as part of a single project include, but are not limited to: (1) The units of carbon capture equipment are owned by the same legal entity; (2) the units of carbon capture equipment are commonly managed or operated; (3) the units of carbon capture equipment are operated under similar operations and maintenance protocols established by the owner of the equipment, considering differences attributable in resource utilization and expected use of captured carbon oxides; (4) the units of carbon capture equipment are constructed pursuant to a single plan for Front-End Engineering and Design (FEED) or other approaches for front-end planning (e.g., the Front-End Loading (FEL) approach); (5) the carbon oxide captured with the carbon capture equipment is transported, disposed of, utilized, or used as a tertiary injectant pursuant to a shared contract; (6) the units of carbon capture equipment were constructed pursuant to a single construction management contract; and (7) if construction of any unit of carbon capture equipment was debt financed, construction of all units of carbon capture equipment is financed pursuant to a single loan agreement.

Some commenters agreed that factors indicating that sites are operated as a single project listed in Notice 2020–12 provide a helpful start for determining whether multiple landfills are operated under a single program. However, these commenters stated that not all of the beginning of construction factors are readily applied to multiple municipal solid waste landfill sites and should be modified for this purpose.

Commenters suggested an alternative aggregation standard, which authorizes aggregation of all facilities that include carbon capture equipment owned by the same taxpayer treating members of an

affiliated group, within the meaning of section 1504, as a single taxpayer for this purpose.

The final regulations allow taxpayers to apply the single project rule in section 8.01 of Notice 2020–12 for purposes of meeting the minimum capture requirements of section 45Q(d). Applying the single project rule in Notice 2020–12 promotes uniformity of application for both the beginning of construction requirement and the minimum capture requirements of section 45Q(d). Also, section 8.01 of Notice 2020–12 states that whether multiple qualified facilities or units of carbon capture equipment are operated as part of a single project will depend on the relevant facts and circumstances. Each of the 8 factors listed in section 8.01 may or may not be relevant in a particular case and, therefore, do not need to be excluded in the final regulations.

D. Industrial Facility

Section 45Q does not define the term “industrial facility.” The proposed regulations adopted the definition of industrial facility in section 3.03 of Notice 2020–12, which provides that an “industrial facility” is 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 and disposal, injection, or utilization, would otherwise be released into the atmosphere. Under the proposed regulations, an industrial facility did not include a facility that produces carbon dioxide from carbon dioxide production wells at natural carbon dioxide-bearing formations or a naturally occurring subsurface spring. The proposed regulations provided that a deposit of natural gas that contains less than 10 percent carbon dioxide by volume is not a natural carbon dioxide-bearing formation (10 percent safe harbor). For other deposits, whether a well is producing from a natural carbon dioxide-bearing formation is based on all the facts and circumstances.

1. Exclusion

Commenters sought clarification and revisions to the 10 percent safe harbor for naturally occurring carbon oxides, seeking a higher threshold or a bright-line rule. For example, commenters sought a rule providing that when a facility captures a carbon dioxide stream from a manufacturing process where carbon dioxide is not the exclusive commercial product, it is per se an industrial facility, without regard to whether the carbon dioxide was produced from a deposit of natural gas

that contained greater than 10 percent carbon dioxide by volume. A commenter suggested revising the examples in § 1.45Q–2(d)(4) of the proposed regulations to incorporate definitions and applications of industrial facility, natural carbon oxide-bearing formations, and the 10 percent safe harbor. Commenters recommended that producing carbon dioxide from a carbon dioxide-bearing formation should be considered a manufacturing process so long as the facility also manufactures products other than carbon dioxide that are intended to be sold at a profit or for commercial use.

The Treasury Department and the IRS agree with the majority of commenters who noted that a bright line rule that excludes carbon dioxide production wells at natural carbon dioxide-bearing formations, or at naturally occurring subsurface springs, with greater than 90 percent carbon dioxide by volume would conform with the recognized and administrable definition of natural carbon dioxide-bearing formations or a naturally occurring subsurface spring. Thus, the final regulations replace the facts and circumstances standard and the 10 percent safe harbor in the proposed regulations and adopt a greater than 90 percent test.

The final regulations also provide an exception for wells at natural carbon dioxide-bearing formations or naturally occurring subsurface springs that contain a product other than carbon dioxide. This exception provides that a well meeting the 90 percent test will not be treated as a carbon dioxide production well at a natural carbon dioxide-bearing formation or a naturally occurring subsurface spring if: (a) The gas stream contains a product, other than carbon oxide, that is commercially viable to extract and sell, without taking into account the availability of a commercial market for the carbon oxide that is extracted or any section 45Q tax credit that might be available; (b) the taxpayer provides an attestation from an independent registered engineer with experience in feasibility studies for natural gas extraction that the gas stream contains a product, other than carbon oxide, that is commercially viable to extract and sell, without taking into account the availability of a commercial market for the carbon oxide that is extracted; (c) a direct air capture facility (defined in section 45Q(e)(1)(A)) is not used to capture carbon oxide from the gas stream; and (d) any carbon oxide extracted from the deposit is used as tertiary injectant in an enhanced oil or natural gas recovery project or as feedstock of a utilization project (i.e., the cycling of the gas from the deposit

to a processing facility and then back to the deposit will not be considered the capture and storage of carbon oxide for purposes of the section 45Q credit).

2. Electricity Generating Facility

Commenters recommended adding more details to the definition of industrial facility. For example, the commenters suggested expressly including “electricity generating facility” in the definition. Under section 45Q(d), an electricity generating facility is treated as an industrial facility. As a result, the final regulations adopt this commenter’s recommendation and revise the definition of industrial facility at § 1.45Q–2(d) to include electricity generating facilities. However, to be a qualified facility, an electricity generating facility must capture at least 500,000 metric tons of qualified carbon oxide during the taxable year.

3. Manufacturing Process

A commenter noted that the definition of “manufacturing process” in § 1.45Q–2(d)(3) of the proposed regulations is not appropriately applied in the example at § 1.45Q–2(d)(4) of the proposed regulations. The commenter requested that the example be modified to recognize that, to the extent carbon oxide was captured from a process that manufactured methane that fueled and powered processing equipment, the carbon oxide should be considered qualified carbon oxide because the manufactured methane was used for a commercial purpose.

The final regulations clarify the example but do not adopt the commenter’s request to treat the carbon oxide as qualified carbon oxide. In the example, because carbon oxide is the only product manufactured that is intended to be sold at a profit or used for a commercial purpose, the process described in the example is not a manufacturing process, and the carbon dioxide captured by the process is not qualified carbon oxide.

4. General Comments

A commenter recommended revising the definition of an “industrial facility” under § 1.45Q–2(d) of the proposed regulations as follows: “An industrial facility is a facility that produces a carbon oxide stream from a fuel combustion source (whether or not the combustion generates mechanical or electrical power) or fuel cell, a manufacturing process, or a fugitive carbon oxide emission source that, absent capture and disposal, would otherwise be released into the atmosphere as industrial emission of

greenhouse gas or lead to such release.” One commenter recommended clarifying what is meant by “a fugitive carbon oxide emission source” by applying the definition from the EPA’s Clean Air Act regulations, 40 CFR 57.103(m), which defines fugitive emissions as “any air pollutants emitted to the atmosphere other than from a stack.”

The final regulations do not amend the definition of “fugitive carbon oxide emission source.” The definition is accurate in the proposed regulations. However, pursuant to several requests for examples to illustrate the application of the rule for manufacturing processes, the final regulations clarify the example at § 1.45Q–2(d)(4), and add an additional example to illustrate the concept of what qualifies as a manufacturing process.

5. Industry-Specific Comments

Commenters recommended that the final regulations modify the definition of industrial facility to include facilities that produce a carbon dioxide stream from a biogas flare, biogas-to-electricity facility, flare stack gas, LFG-to-electricity, and biogas processing facility. One commenter requested clarification regarding whether a flare facility will satisfy the definition of an industrial facility as a “facility that produces a carbon oxide stream from a fuel combustion source.”

Another commenter requested clarification regarding whether a facility that combusts biogas to generate electricity (LFGTE Facility) would satisfy the definition of an industrial facility as “a facility that produces a carbon oxide stream from a fuel combustion source.”

A commenter requested clarification on whether a LFG processing facility would satisfy the definition of an industrial facility as “a facility that produces a carbon oxide stream from . . . a manufacturing process” to the extent that they manufacture a biomethane product that is sold on the market or is used for fueling collection vehicles that otherwise would run on conventional natural gas.

One commenter sought confirmation that a biogas flare facility meets the definition of an industrial facility as “a facility that produces a carbon oxide stream from a fuel combustion source” despite not resulting in generation of electricity or mechanical work. Alternatively, the commenter requested clarification that an LFTGE Facility meets the definition of an industrial facility because it produces a carbon dioxide stream from a fuel combustion source. The commenter further

requested clarification that a biogas facility meets the definition of an industrial facility because it produces a carbon dioxide stream from a manufacturing process. The commenter also requested that the final regulations provide an additional example that demonstrates how biogas facilities meet the definition of an industrial facility.

One commenter requested that the regulations be revised to state that a flare at a facility that utilizes methane from municipal solid waste (MSW) as a fuel to combust regulated non-methane organic compounds (NMOCs) contained in biogas qualifies as an industrial facility as “a producer of a carbon oxide stream from a fuel combustion source.” The commenter suggested that § 1.45Q–2(d) of the proposed regulations be revised to clarify that a facility producing a carbon oxide stream from a fuel combustion source does not need to generate electrical or mechanical power for productive use to qualify as an industrial facility.

The determination of whether any particular facility qualifies as an industrial facility will depend on the facts and circumstances. A rule that explicitly characterizes certain facilities as industrial facilities would risk being imprecise or giving rise to the perception that those facilities not listed will not qualify, making a facts and circumstances approach preferable. Thus, the final regulations do not adopt these comments.

E. Direct Air Capture Facility

Section 45Q(e)(1) provides that the term “direct air capture facility” means any facility which uses carbon capture equipment to capture carbon dioxide directly from the ambient air, except the term does not include any facility which captures carbon dioxide that is deliberately released from naturally occurring subsurface springs or using natural photosynthesis.

The proposed regulations reiterated the statutory provision. In response to the proposed regulations, one commenter requested clarification of the definition of direct air capture facilities, which inherently may capture nominal amounts of carbon dioxide using natural photosynthesis. The commenter discussed that carbon dioxide present in the air not only consists of carbon dioxide vented from industrial sources but also contains small amounts of carbon dioxide that was produced by plant life through natural photosynthesis. The commenter suggested that if the definition of direct air capture facility were strictly interpreted to not allow for capture of even nominal amounts of carbon

dioxide produced through natural photosynthesis, then no direct air capture facility could qualify for the definition.

The final regulations do not adopt this comment. Section 45Q(c)(1)(C) provides that direct air capture facilities capture carbon dioxide from directly from ambient air. By its nature, ambient air includes carbon dioxide and other qualified carbon oxides from all sources, whether from naturally-occurring subsurface springs, animal respiration, or the very trace amounts produced as part of natural photosynthesis when a plant utilizes carbon dioxide to produce oxygen. Therefore, the plain meaning of the term ambient air encompasses these concepts.

F. Secure Geological Storage

Section 45Q(f)(2) provides that the Secretary, in consultation with the Administrator of the EPA, the Secretary of Energy, and the Secretary of the Interior, must establish regulations for determining adequate security measures for the geological storage of qualified carbon oxide under section 45Q(a) such that the qualified carbon oxide does not escape into the atmosphere. Such term includes, but is not limited to, storage at deep saline formations, oil and gas reservoirs, and unminable coal seams under such conditions as the Secretary may determine under such regulations.

Injection of carbon oxide into any underground reservoir, onshore or offshore under submerged lands within the territorial jurisdiction of States, requires the operator to comply with Underground Injection Control (UIC) program regulations under the Safe Drinking Water Act and to obtain the appropriate UIC well permits. Under 40 CFR 146.5 (Classification of injection wells), Class II may be an appropriate UIC well permit for wells that inject fluids (including carbon dioxide) brought to the surface in connection with conventional oil or natural gas production and may be commingled with waste waters from gas plants that are an integral part of production operations, unless those fluids are classified as a hazardous waste at the time of injection, and for wells which inject fluids (including carbon oxides) for enhanced recovery of oil or natural gas. Class VI is an appropriate UIC well permit for wells that are not experimental in nature that are used for geologic sequestration of carbon dioxide beneath the lowermost formation containing an underground source of drinking water; or, for wells used for geologic sequestration of carbon dioxide that have been granted a waiver of the injection depth requirements pursuant

to requirements at 40 CFR 146.95; or for wells used for geologic sequestration of carbon dioxide that have received an expansion to the areal extent of an existing Class II enhanced oil recovery or enhanced gas recovery aquifer exemption pursuant to §§ 146.4 and 144.7(d) of 40 CFR.

Operators that inject carbon dioxide underground are also subject to the EPA's Greenhouse Gas Reporting Program (GHGRP) requirements set forth at 40 CFR part 98. Under 40 CFR part 98 subpart RR (Geologic Sequestration of Carbon Dioxide source category, referred to as subpart RR), certain facilities, including UIC Class VI wells, are required to report basic information on carbon dioxide received for injection, develop and implement an EPA-approved site-specific Monitoring, Reporting, and Verification Plan (MRV Plan), and report the amount of carbon dioxide geologically sequestered using a mass balance approach and annual monitoring activities. Under 40 CFR part 98 subpart UU (Injection of Carbon Dioxide source category, referred to as subpart UU), all other facilities that inject carbon dioxide underground such as for EOR or any other purpose, are required to report basic information on carbon dioxide received for injection. Facilities that conduct EOR are not required by 40 CFR part 98 to report under subpart RR unless (1) the owner or operator chooses to opt into subpart RR or, (2) the facility holds a UIC Class VI permit for the well used for EOR. Annual reports that are submitted under 40 CFR part 98 to the EPA's GHGRP undergo verification by the EPA, and non-confidential data from these reports are published on the EPA's website.

The proposed regulations allowed CSA/ANSI ISO 27916:2019 as an alternative to subpart RR for UIC Class II wells using qualified carbon oxide for EOR, but did not allow standards set by states as an alternative to subpart RR. In addition, the proposed regulations did not provide for an alternative to subpart RR reporting for UIC Class VI wells because all UIC Class VI wells are already subject to subpart RR reporting requirements. A taxpayer that reported volumes of carbon oxide to the EPA pursuant to subpart RR may self-certify the volume of carbon oxide claimed for purposes of section 45Q. Alternatively, if a taxpayer determined volumes pursuant to CSA/ANSI ISO 27916:2019, the taxpayer may prepare documentation as outlined in CSA/ANSI ISO 27916:2019 internally, but such documentation must be provided to a qualified independent engineer or geologist, who then must certify that the documentation provided, including the

mass balance calculations as well as information regarding monitoring and containment assurance, is accurate and complete.

1. General Comment

One commenter noted that the proposed regulations use different terms to describe the location where secure geological sequestration occurs, and suggested using a single term "secure geological storage site" throughout the final regulations. The final regulations adopt this comment and incorporate the suggestion throughout.

2. Requirements for Qualified Independent Engineers or Geologists

In response to the proposed regulations, commenters discussed the "qualified independent engineer or geologist" requirement applicable to the ISO standard for UIC Class II wells using qualified carbon oxide for EOR. Commenters recommended including a company's professional engineer in good standing to be qualified to make the required certification, despite being employed by the taxpayer.

Commenters suggested that the qualified independent engineer or geologist should be able to be either an individual or a team. Commenters recommended that the leader of the team be a licensed petroleum engineer or professional geologist, and that the individual or team be employed independently of the taxpayer. A commenter recommended that the party or teams performing the certification be accredited by a third-party accreditation body to reduce the potential impacts of employment by the taxpayer and still maintain independence.

Commenters requested that the final regulations adopt the established and internationally recognized American National Standards Institute (ANSI) National Accreditation Board ANAB accreditation program for third-party validation and verification bodies found at <https://anab.ansi.org/greenhouse-gas-validation-verification/>. The Commenters requested that this process be used as the accreditation process for certifying qualified, independent individuals or bodies to review all of the relevant documentation for verifying long-term storage of qualified carbon oxide injected into EOR projects under CSA/ANSI ISO 27916:2019.

Some commenters suggested options for a competent accreditation body for implementation of CSA/ANSI ISO 27916:2019 such as the American National Standards Institute (ANSI), which currently acts as the accreditation body for Greenhouse Gas Program reporting verifications, or other

international professional organizations such as the Society of Petroleum Engineers.

The final regulations do not adopt these recommendations. While the suggested accreditation bodies may be able to certify third-party reporting under similar standards, at this time no accreditation body exists that expressly certifies third-party reporting under CSA/ANSI ISO 27916:2019. Instead, the final regulations clarify that the qualified independent engineer or geologist certifying a project must be duly registered or certified in any State.

A commenter noted the difference in language between § 1.45Q-3 of the proposed regulations, regarding “qualified independent engineer or geologist” for secure geological storage, and § 1.45Q-4 of the proposed regulations, regarding “independent third-party” for utilization, asking whether the geologist would need to be a third party as well or provide affidavits regarding the independence of the geologist or team.

In response to this comment, the final regulations provide that the certification required must be accompanied by an affidavit from the qualified independent engineer or geologist stating under penalties of perjury that the qualified independent engineer or geologist is independent from the taxpayer, electing taxpayer, and/or credit claimants as applicable.

A commenter recommended that for taxpayers using the ISO standard, the final regulations should require annual certification of volumes by a party accredited by a nationally or internationally recognized CSA/ANSI ISO 27916:2019 accreditation body.

In contrast to the recommendation that a company may use its own professional engineer in good standing to make the required certification, another commenter recommended clarifying “independent” to mean a person who is not an employee of the taxpayer.

Commenters suggested that the standard of independence for a qualified engineer or geologist should be the same standard of independence for the “independent third-party” described in § 1.45Q-4(c)(2) of the proposed regulations. Section 1.45Q-4(c)(2) of the proposed regulations provided that the measurement and written LCA report must be performed by or verified by an independent third-party. The report must contain documentation consistent with the International Organization for Standardization (ISO) 14044:2006, “Environmental management—Life cycle assessment—Requirements and Guidelines,” as well as a statement

documenting the qualifications of the third-party, including proof of appropriate U.S. or foreign professional license, and an affidavit from the third-party stating that it is independent from the taxpayer. Therefore, the commenters recommended that the certification requirements under § 1.45Q-3(d) of the proposed regulations should be amended to include an affidavit from the qualified engineer or geologist stating that he or she is independent from the taxpayer, the electing taxpayer, and the credit claimant.

Commenters recommended that the qualified independent engineer or geologist make his or her certification under penalties of perjury. The commenters noted that this standard of certification is required for petroleum engineers who certify enhanced oil recovery projects under section 43. Another commenter recommended that the final regulations take into account the EOR-related provisions under § 1.43-3 and limit § 1.45Q-2(h)(4) of the proposed regulations to only natural gas projects, and expressly state that certifications for enhanced oil projects under section 43 must be made annually even if no section 43 credit is being claimed.

Commenters requested that the final regulations define “qualified engineer/qualified geologist” as a person, or team led by such a person, with relevant expertise in areas such as enhanced oil or natural gas recovery projects, secure geologic storage of carbon dioxide, and the requirements of CSA/ANSI 27916:2019, and who is licensed as a Professional Engineer or Professional Geologist.

The final regulations take the commenters’ recommendations into account by refining the definition of qualified independent engineer or geologist. The revised definition incorporates the same standard of independence used for an “independent third party” that was described in § 1.45Q-4(c)(2) of the proposed regulations. Further, the final regulations apply the rules imposed on engineers who provide certifications for the section 43 enhanced oil recovery credit regarding qualifications to the “qualified independent engineer or geologist” who provides a certification for the ISO standard.

3. ISO Standard

A commenter noted that the proposed regulations only applied the ISO standard to EOR projects and did not apply the ISO standard to enhanced natural gas recovery projects. The commenter proposed that the final regulations require UIC Class II permit

holders to receive an approved MRV plan under subpart RR for enhanced natural gas recovery projects. The commenter requested that the final regulations maintain EPA’s GHGRP subpart RR requirements as minimum reporting requirements to demonstrate “secure storage” under section 45Q, arguing that allowing claimants to use CSA/ANSI ISO 27916:2019, instead of subpart RR, lowers the bar for demonstrating secure geological storage, weakens the existing transparency of the program, and removes EPA from its role in approving MRV plans. The commenter requested that the regulation be revised to require a taxpayer to receive an approved MRV plan before any section 45Q credit can be claimed. The principles of CSA/ANSI ISO 27916:2019 apply to both EOR projects and enhanced natural gas recovery projects. Accordingly, the final regulations do not adopt this comment.

Another commenter requested that the final regulations prohibit section 45Q credit claims until a new class of UIC well and/or other regulations are developed, specifically for CO₂-EOR. The commenter stated that existing regulations for CO₂-EOR are not designed to ensure secure geological storage of qualified carbon oxides, and allowing a tax credit for this activity is inappropriate.

A commenter suggested that for taxpayers awaiting approval of an MRV plan, during the interim period beginning when carbon capture operations commence and ending when an MRV plan is finalized, the final regulations should allow taxpayers to claim section 45Q tax credits. However, another commenter disagreed with the suggestion for interim allowance of the credit, suggesting that only taxpayers with approved MRV plans should be allowed to claim the credit. The final regulations do not adopt an interim allowance of the credit. Allowing taxpayers that use subpart RR to claim the section 45Q credit before they receive an EPA-approved MRV plan would conflict with the long-standing position of the Treasury Department and the IRS that this condition must be met for purposes of determining adequate security measures for the geological storage of qualified carbon oxide such that the qualified carbon oxide does not escape into the atmosphere.

A commenter disapproved of the allowance of the ISO standard, preferring subpart RR and MRV plans to be the sole standard for disposal and injection of qualified carbon oxide. The Treasury Department and the IRS, in consultation with the EPA, DOE, and the Department of Interior, agree that

the ISO standard is an alternative standard for a qualified enhanced oil or natural gas recovery project. Both subpart RR and CSA/ANSI ISO 27916:2019 require an assessment and monitoring of potential leakage pathways, quantification of inputs, losses and storage through a mass balance approach, and documentation of steps and approaches. Therefore, the final regulations retain the ability for taxpayers to use the CSA/ANSI ISO 27916:2019 standard to establish that qualified carbon oxides are being securely stored.

Another commenter requested that the final regulations provide additional detail regarding what documentation is required to establish the volumes of qualified carbon oxide that were captured and disposed of, injected, or utilized, and what taxpayer(s) would need to file such documentation.

a. Certifications

A commenter recommended that the final regulations require annual qualified, independent, third-party verification of conformance with the ISO standard for taxpayers electing to use it to bolster reporting standards. Another commenter requested that in addition to the currently proposed mass balance calculations and information regarding monitoring and containment assurance (as required by the ISO standard) to be reported on an annual basis, § 1.45Q–3(d) of the proposed regulations should be revised to explicitly require three key types of documentation that cover the lifecycle of a qualified carbon oxide EOR project. The three types of documentation include: (1) Initial documentation (as required by CSA/ANSI ISO 27916:2019 § 4.3) required prior to period of quantification; (2) Periodic documentation (as required by CSA/ANSI ISO 27916:2019 § 4.4) required at least annually throughout the lifespan of the project; and (3) Termination documentation (as required by CSA/ANSI ISO 27916:2019 § 10.4).

Several commenters requested that § 1.45Q–3(d) be revised to allow that a certification by a qualified independent engineer or geologist would be a one-time event based upon the project's physical or contractual manner of use of qualified carbon oxide as a tertiary injectant in a EOR or natural gas recovery project.

One commenter noted that annual confirmation by a credit claimant on Form 8933 that the project is being executed pursuant to the certified CSA/ANSI ISO 27916:2019 standard (subject to IRS audit, recapture and potential

penalty) should be sufficient for subsequent years.

The final regulations do not adopt these comments. Taxpayers must provide all documentation required by CSA/ANSI ISO 27916:2019 to the verifying party, and the documentation recommended by the commenters is already required by that standard. Adding a separate documentation requirement for taxpayers to provide all documentation required by CSA/ANSI ISO 27916:2019 to the verifying party and to submit that documentation to the IRS would be redundant and an unwarranted burden on taxpayers.

b. Transparency

A commenter supported the concept that the initial ISO plan and annual reports be made available to the public, similar to MRV Plans and associated subpart RR annual reports.

Several commenters requested that the EPA promulgate a new subpart to the GHGRP regulations to establish procedures for documenting and reporting the amount of carbon oxide securely stored using the ISO standard for EOR projects. Proponents of these rules request that the final regulations include an interim approach to provide public access to the relevant information needed to maintain public confidence in the integrity of the section 45Q tax credit.

The Treasury Department and the IRS do not have the authority to disclose taxpayer information or to require taxpayers to self-disclose taxpayer information as a condition of using the ISO standard provided in the final regulations. Therefore, the final regulations do not adopt the recommendations of the commenters requesting such disclosure. However, the inflation adjustment factor notices published by the IRS annually will continue to provide the total metric tons of credits that have been taken into account claimed, without publishing taxpayer information.

G. Tertiary Injectant

Section 45Q(e)(3) defines tertiary injectant as follows: “The term ‘tertiary injectant’ has the same meaning as when used within section 193(b)(1).” Section 1.45Q–2(h)(6) of the proposed regulations defines tertiary injectant as follows:

For purposes of section 45Q, a tertiary injectant is qualified carbon oxide that is injected into and stored in a qualified enhanced oil or natural gas recovery project and contributes to the extraction of crude oil or natural gas. The term tertiary injectant has the same meaning as used within section 193(b)(1) of the Code. A commenter

requested the definition of tertiary injectant in § 1.45Q–2(h)(6) of the

proposed regulations be revised because section 193(b)(1) does not define “tertiary injectant,” and § 1.193–1(b)(2), merely references other applicable energy regulations and tax regulations. The commenter suggested that the final regulations define “tertiary injectant” as any injectant that is used as part of a qualified enhanced oil or natural gas recovery project, and does not include a hydrocarbon injectant defined in section 193(b)(2) that is recoverable. Section 45Q(e)(3) provides that the term tertiary injectant has the same meaning as when used within section 193(b)(1). Therefore, the final regulations do not adopt the commenter's suggested revision.

IV. Utilization of Qualified Carbon Oxide

Section 45Q(f)(5)(A) provides that “utilization of qualified carbon oxide” means (i) the fixation of such qualified carbon oxide through photosynthesis or chemosynthesis, such as through the growing of algae or bacteria; (ii) the chemical conversion of such qualified carbon oxide to a material or chemical compound in which such qualified carbon oxide is securely stored; or (iii) the use of 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 enhanced oil or natural gas recovery project), as determined by the Secretary.

Section 45Q(f)(5)(B) provides a methodology to determine the amount of qualified carbon oxide utilized by the taxpayer. Such amount is equal to the metric tons 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 the Secretary of Energy and the 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 section 45Q(f)(5)(A). 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)(H)), as in effect on February 9, 2018, except that “product” is substituted for “fuel” each place it appears in such subparagraph.

The proposed regulations conformed the definition of utilization to the statutory definition. The proposed regulations also provided that an

analysis of lifecycle greenhouse gas emissions (LCA) must be in writing and either performed or verified by a professionally-licensed independent third party. In particular, the proposed regulations required the LCA report to contain documentation consistent with the International Organization for Standardization (ISO) 14044:2006, “Environmental management—Life cycle assessment—Requirements and Guidelines,” as well as a statement documenting the qualifications of the independent third party. The proposed regulations required a taxpayer to submit an LCA report to the IRS and the DOE, with the LCA report subject to a technical review by the DOE. Further, the proposed regulations provided that the IRS, in consultation with the DOE and the EPA, would determine whether to approve the LCA report.

A. Lifecycle Analysis—Amount Utilized

In response to the proposed regulations, commenters requested that the final regulations provide more detail regarding the use of LCAs and specifically address whether greenhouse gases other than qualified carbon oxides qualify for the section 45Q credit.

Some commenters requested clarification that the section 45Q credit is not available for a reduction of carbon dioxide equivalents but only for qualified carbon oxides. The commenters based this recommendation on the statutory language in section 45Q(a) and (f)(5) limiting the section 45Q credit to qualified carbon oxide. Some commenters further suggested that an LCA merely should be used to determine whether a product or process generally is eligible for section 45Q credits, while the amount of section 45Q credits generated by a given product or process should be correlated only to the volume of carbon oxides directly utilized from a qualified facility or displaced from being emitted to the atmosphere.

Other commenters suggested that the plain language of section 45Q(f)(5)(B) requires the section 45Q credit calculation to be based on all greenhouse gases reflected in the LCA because the measurement of qualified carbon oxides for purposes of utilization is based on carbon dioxide equivalents (CO₂-e), not carbon oxides. CO₂-e is a unit of measurement, providing a common scale for measuring the climate effects of different greenhouse gases. It includes carbon oxides, as well as methane, and other greenhouse gases. Some of these commenters stated that section 45Q(f)(5)(B)(ii) directs the IRS to look to the Clean Air Act for the definition of lifecycle greenhouse gas

emissions, which requires an analysis of all greenhouse gases. According to these commenters, because an LCA performed in accordance with section 45Q(f)(5) must include the aggregate quantity of greenhouse gas emissions captured and permanently isolated from the atmosphere, or displaced from being emitted into the atmosphere, such greenhouse gases are treated as carbon oxides for purposes of measuring the amount of qualified carbon oxide upon which the section 45Q credit is calculated.

One commenter inquired whether the numerical values resulting from direct measurement (via metered flows of qualified carbon oxide at the point of capture and subsequent use) are properly viewed as a “ceiling” on allowed section 45Q benefits, subject to netting as a result of the lifecycle impacts on qualified carbon oxide emissions as documented in the LCA report.

Another commenter proposed that the section 45Q credit be based on the lesser of directly utilized emissions and the amount of carbon oxide determined to be displaced by an LCA. According to the commenter, this approach would set a cap on the number of credits that can be claimed by a product or process, equal to the volume of utilized carbon oxides that originated from mechanical carbon capture equipment at a qualified facility, and it is consistent with the section 45Q accounting method for the secure geologic storage of carbon dioxide.

A commenter recommended that the final regulations include examples of how an “all-greenhouse-gas LCA” works in connection with the “only carbon oxides” tax credit.

Although all greenhouse gas emissions are taken into account by an LCA, the section 45Q credit may only be calculated on the qualified carbon oxides that are captured and utilized. Section 45Q makes this clear in a number of instances. First, the general rule in section 45Q(a) provides a credit for metric tons of “qualified carbon oxide” captured and used by the taxpayer as a tertiary injectant in a qualified enhanced oil or natural gas recovery project and disposed of by the taxpayer in secure geological storage, or utilized, not for other greenhouse gases. Second, the statutory definition of “qualified carbon oxide” in section 45Q(c) limits the applicability of section 45Q to “any carbon dioxide or other carbon oxide.” The definition does not include other greenhouse gases. Third, under section 45Q(f)(1), section 45Q applies to qualified carbon oxide captured and utilized within the United

States, not to other greenhouse gases. Fourth, the title of section 45Q, “Credit For Carbon Oxide Sequestration,” does not suggest that section 45Q credits may be claimed for greenhouse gases other than carbon oxide. Fifth, if a greenhouse gas other than carbon oxide (such as methane) were to qualify for the section 45Q credit as a CO₂-e, the utilization of that other greenhouse gas would qualify for multiple times the credit as carbon oxide based on its CO₂-equivalence. This is an unreasonable result under the statute. Sixth, greenhouse gases other than carbon oxides do not contribute to the amount of qualified carbon oxide required to meet the emission and capture thresholds for a qualified facility under section 45Q(d)(2). Finally, under section 45Q(f)(5)(B), the amount of qualified carbon oxide utilized is equal to the metric tons of qualified carbon oxide which the taxpayer demonstrates, based upon an LCA, were captured and permanently isolated from the atmosphere, or displaced from being emitted into the atmosphere through use of a process described in section 45Q(f)(5)(A). Therefore, the calculation of the section 45Q credit must be based on qualified carbon oxide, not other greenhouse gases.

The final regulations provide that the amount of the section 45Q credit is not computed on all greenhouse gases, but is based only on qualified carbon oxide captured and utilized. For purposes of determining the amount of qualified carbon oxide utilized by the taxpayer under section 45Q(a)(2)(B)(ii) or (a)(4)(B)(ii), such amount shall be equal to the metric tons of qualified carbon oxide which the taxpayer demonstrates, based upon an LCA, were captured and permanently isolated from the atmosphere, or displaced from being emitted into the atmosphere through a use of a process described in section 45Q(f)(5)(A).

Section 45Q(f)(5)(B) provides that an LCA must be used for purposes of determining the amount of qualified carbon oxide utilized by the taxpayer. However, an LCA does not yield a result in metric tons of qualified carbon oxide that is utilized. An LCA provides the result in CO₂-e. The final regulations reconcile this by requiring the use of an LCA to measure CO₂-e, but limiting the section 45Q credit to the amount of qualified carbon oxide measured at the source of capture. This allows taxpayers to continue to use the current industry-standard LCA process, ensuring an overall decrease in greenhouse gases, while also preventing taxpayers from claiming the section 45Q credit for a reduction in greenhouse gases other than carbon oxides (measured in CO₂-e)

that exceeds the amount of carbon oxides that are captured.

The final regulations do not provide examples, but the Treasury Department and the IRS will consider issuing future guidance regarding common fact patterns.

A commenter requested that LCAs recognize biogenic carbon dioxide in any greenhouse gas as a neutral factor without any global warming potential. This issue exceeds the scope of these final regulations. Therefore, the final regulations do not adopt this comment.

A commenter requested that the final regulations add the phrase “through use of a process described in paragraph (a) of this section” to § 1.45Q–4(b)(1) of the proposed regulations, as the phrase modifies “captured and permanently isolated from the atmosphere,” and “displaced from being emitted into the atmosphere.” This is consistent with the statute. Therefore, the final regulations adopt the commenter’s suggestion.

B. Lifecycle Analysis—Standards of Adequate Lifecycle Analysis

The proposed regulations did not provide standards of lifecycle analysis, and the Treasury Department and the IRS requested comments on this issue. Commenters supported adopting the ISO standards, in particular ISO 14044:2006 for preparing an LCA for purposes of section 45Q. One commenter stated that a detailed discussion of the process of determining the appropriate baseline and boundaries is set forth in the ISO LCA Standard. Commenters asserted that it would be very difficult to develop a one-size-fits-all solution to the selection of boundaries and baselines for all products, as these determinations depend on the particular product involved. One commenter posited that attempting to do so in the final regulations likely would undermine the ISO standard.

One commenter supported the use of the ISO 14044:2006 standard, but requested that the final regulations clarify that the results of the LCA for section 45Q purposes are unique compared to how the ISO standard might be used in other contexts.

Another commenter requested that the regulations clarify whether LCA reports are to be prepared in full conformity with the standards of ISO 14044:2006, or just consistent with the standard. The commenter supported full conformity with the standard as this should readily enable LCA review and comparison across LCAs.

The ISO standards provide consistency, especially in the LCA context. ISO 14040:2006,

“Environmental management—Life cycle assessment—Principles and framework for LCAs, by describing the LCA and its phases in general terms, and ISO 14044:2006, “Environmental management—Life cycle assessment—Requirements and guidelines,” details the requirements for conducting an LCA.

It would be very difficult to develop a one-size-fits-all solution to the selection of boundaries and baselines for all products. Thus, the final regulations retain the requirement that the LCA must conform with ISO 14044:2006 and add a reference to ISO 14040:2006, “Environmental management—Life cycle assessment—Principles and framework,” as that standard discusses the overall framework for LCAs. The final regulations also clarify that LCAs must be prepared and documented in conformance with the ISO standards. The Treasury Department and the IRS note that the DOE’s current CO₂ utilization guidelines are consistent with the ISO standards. Such guidance can be found on DOE’s website under the National Energy Technology Laboratory’s CO₂ Utilization Guidance Toolkit at <https://www.netl.doe.gov/LCA/CO2U>.

One commenter also recommended that the final regulations incorporate the use of ISO 14067:2018, “Greenhouse gases—Carbon footprint of products—Requirements and guidelines for quantification,” which addresses the proper boundaries for an LCA. The commenter further recommended that the IRS acknowledge that an LCA performed consistently with ISO 14044 and ISO 14067 satisfies the statutory requirement to assess greenhouse gas emissions from the full product lifecycle.

Another commenter recommended applying regulations implemented by the GHGRP (40 CFR part 98), because 40 CFR part 98 provides comprehensive and detailed rules and equations for measuring greenhouse gas emissions in the United States.

ISO 14067:2018 and the GHGRP do not provide overall guidance on LCAs. The reporting of greenhouse gases serves a different purpose than the LCA for purposes of section 45Q. Therefore, the final regulations do not cite to these standards.

C. Lifecycle Analysis—Boundaries

The Treasury Department and the IRS requested comments regarding how to achieve consistency in boundaries for similarly-situated taxpayers. One commenter requested that the IRS

clarify the boundaries of the LCA and how other greenhouse gases should be taken into account in the lifecycle analysis of the utilization process. The commenter recommended that, with respect to non-carbon oxide greenhouse gases, the final regulations set the boundaries for the LCA at the beginning of the utilization process, and after the capture of the qualified carbon oxide. The commenter recommended that if the utilization of the qualified carbon oxide results in emissions of other greenhouse gases, then the emissions should be taken into account in the LCA as CO₂-e, but the capture of greenhouse gases other than carbon oxides should not be taken into account in the LCA.

Another commenter supported the rule in the proposed regulations that calculates lifecycle emissions based on the aggregate quantity of greenhouse gas emissions related to the full product lifecycle relative to a baseline for certain products and processes. According to the commenter, a holistic perspective is needed to account for key factors such as product longevity and durability relative to the status quo.

Another commenter recommended that the final regulations rely on the ISO standards to determine the full product lifecycle, specifically ISO Standards 14044 and 14067. According to the commenter, any requirements in addition to the ISO standards would create an undefined and potentially overbroad LCA requirement that Congress likely did not intend.

A commenter recommended that the final regulations set the LCA end boundary at the facility gate for all products other than fuels, because the carbon intensity for such products outside the boundary gates (in the product-use or product-disposal phase) will not vary between the process that uses captured carbon oxide and the process that sources its carbon oxide elsewhere. Commenters suggested that because respective use and end-of-life phases of the technologies being compared are the same, they could be excluded from the LCA. These commenters noted significant challenges associated with obtaining the information about the products’ use and disposal and when the products may be sold to third parties for use and disposal.

During their lifecycle, products undergo different stages from feedstock extraction to production phases, and use phase, until the end-of-life (disposal, recycle). System boundaries set the limits of the product system and must be selected in line with the overall goal of the assessment. The final regulations define lifecycle greenhouse gas

emissions consistently with section 45Q(f)(5)(B)(ii). The definition uses the cradle-to-grave boundary, which considers the entire product life cycle, including all the phases from raw material extraction until end-of-life.

ISO 14040:2006 and ISO 14044:2006 identify the rules regarding the system boundary. Although the cradle-to-grave boundary is used for LCAs, ISO 14044:2006 permits the deletion of lifecycle stages under certain circumstances, when the deletion will not significantly change the overall conclusions of the study.

Because the final regulations require LCAs to be performed in conformity with ISO 14040:2006 and 14044:2006, the final regulations provide that generally an LCA must take into account emissions from cradle to grave, unless the deletion of lifecycle stages is permitted by ISO 14040:2006 and ISO 14044:2006. Any decisions to omit lifecycle stages must be clearly stated in the LCA report, and the reasons and implications for the omission must be explained in the LCA report.

D. Lifecycle Analysis—Comparison Systems

The Treasury Department and the IRS requested comments regarding how to achieve consistency in baselines for similarly-situated taxpayers. One commenter requested guidance regarding the baselines to be used for the LCA, and requested that the regulations clarify that it is not necessary for the LCA to identify as a baseline a process that was previously used by the taxpayer or the taxpayer's industry in which qualified carbon oxide was not used. According to the commenter, if the LCA were required to be prepared using a baseline that illustrates the difference from a changed process, then taxpayers that are engaged in a qualifying activity but cannot demonstrate that they previously made the product using non-qualified carbon oxide will not be able to provide an LCA that shows the greenhouse gas emission reductions from the process they are using. The commenter suggested that the LCA should compare the capture and utilization process to a baseline in which the taxpayer sourced carbon oxide from a fossil carbon source.

The final regulations provide that an LCA must demonstrate that the proposed process results in a net reduction of CO₂-e when compared to a comparison system. The LCA must be prepared in conformity with ISO 14040:2006 and ISO 14044:2006. In addition, Taxpayers must use the NETL's CO₂ Utilization Guidance Toolkit, including the guidance and

data available on DOE's website at <https://www.netl.doe.gov/LCA/CO2U>. Further, for purposes of the section 45Q credit, taxpayers must continue to use the NETL's CO₂ Utilization Guidance Toolkit, including the guidance and data available on DOE's website at <https://www.netl.doe.gov/LCA/CO2U>, until such time as additional guidance is developed by the DOE or another federal agency.

E. Lifecycle Analysis—Verification

The proposed regulations stated that the taxpayer measures the amount of carbon oxide captured and utilized through a combination of direct measurement and LCA. Commenters requested clarification of the reference to "a combination of direct measurement and LCA." One commenter stated that the language in the proposed regulations implies that direct measurement and LCA are mutually exclusive, which is inconsistent with ISO 14044. The commenter requested clarification regarding whether measurement of the amount of carbon oxide captured and utilized should be through direct measurement, use of a mass balance model, or a combination. In addition, the commenter requested clarification regarding whether an LCA based on calculated and estimated data would receive the same level of scrutiny. The commenter viewed measured data as the highest standard, providing both transparency and an incentive for incremental improvements that displace additional carbon oxides, for purposes of life cycle analysis.

Another commenter requested clarification that the third party preparing or verifying the LCA does not need to take direct measurements on site. The direct measurement of captured and utilized qualified carbon oxide typically will be provided by metering devices installed at the point of capture and/or use.

A commenter requested that the final regulations be modified to focus on verification at the point of utilization, not measurement of carbon oxide at the source of capture.

To increase clarity, the final regulations change the subheading of § 1.45Q-4(c)(2) of the proposed regulations to focus on verifying the amount of qualified carbon oxide utilized through the LCA. Under the final regulations, the LCA measures CO₂-e and verifies that qualified carbon oxide is utilized by demonstrating that the proposed process results in a net reduction of CO₂-e when compared to a comparison system. Thus, if an LCA indicates that the proposed process

reduces CO₂-e emissions by the amount of qualified carbon oxide captured or more, then the LCA has verified that the full greenhouse gas benefit is achieved. The amount of qualified carbon oxide is the lesser of the amount of CO₂-e emission reduction verified by the LCA, or the amount of qualified carbon oxide measured at the source of capture. If the LCA indicates that the CO₂-e emission reduction is less than the amount of qualified carbon oxide captured, then only a portion of the greenhouse gas reduction benefit has been achieved, and the amount of qualified carbon oxide is the amount of CO₂-e emission reduction that is verified by the LCA.

In addition, the final regulations clarify that the LCA may consist of direct and indirect data in conformity with ISO 14040:2006 and 14044:2006. The results of the LCA must be documented in a written LCA report. Regardless of the type of data used, each LCA will be subject to a technical review by the DOE.

Under the final regulations, measurement of qualified carbon oxide at the point of capture is required. The qualified carbon oxide eligible for the section 45Q credit cannot exceed the amount of qualified carbon oxide that is captured.

F. Lifecycle Analysis—Independent Third-Party Review

Section 1.45Q-4(c)(2) of the proposed regulations required a written LCA report to be performed by or verified by an independent third party. In addition, the proposed regulations required the LCA report to include a statement documenting the qualifications of the third party, including proof of appropriate U.S. or foreign professional license, and an affidavit from the third party stating that it is independent from the taxpayer.

Commenters stated that the independent third-party verification requirement seemed reasonable. One commenter suggested substituting a "critical review" of LCAs, as provided by the ISO standards, for the otherwise "undefined 'verification' currently invoked" by the proposed regulations' requirement that a written LCA report must be performed by or verified by an independent third party.

One commenter encouraged permitting voluntary third-party verification of an LCA to avoid regulatory burdens, and suggested that the final regulations provide a safe-harbor for taxpayers who have their LCAs approved by an accredited third-party verification entity.

The final regulations require the LCA and the LCA report to be performed by

or verified by an independent third party. This requirement is intended to increase consistency in the LCAs and to streamline the DOE's technical review of LCAs. The final regulations do not provide a safe-harbor from review of the LCA.

The final regulations also require an LCA report to provide a statement documenting the qualifications of the third party, including proof of appropriate U.S. or foreign professional license, an affidavit from the third party stating that it is independent from the taxpayer (if a section 45Q(f)(3)(B) election has been made, the affidavit must state that the third party is independent from both the electing taxpayer and the credit claimant), and the statement must be made under penalties of perjury. The final regulations do not use the term "critical review," as a "critical review" under ISO does not necessarily require an independent third party.

One commenter noted that the proposed regulations did not describe what constitutes an "appropriate professional license" regarding the qualifications of a third party and requested that the final regulations provide additional guidance. The commenter also recommended coordinating the reference to an "independent third-party" with § 1.45Q-5(c) of the proposed regulations.

Another commenter stated that the verification of the independent third party should be consistent with the certification of the independent engineer or geologist who certifies documentation prepared as outlined in the CSA/ANSI ISO 27916:2019 standard. At a minimum, the commenter stated the independent third party should provide the verification under penalties of perjury. The final regulations adopt this commenter's recommendation by providing that the independent third-party statement must be made under penalties of perjury.

One commenter suggested that the IRS take advantage of existing accreditation programs, such as that used by California or the voluntary program established under the Clean Air Act renewable fuels program.

The final regulations simply require the independent third party to provide proof of an appropriate U.S. or foreign professional license. This requirement provides flexibility to the taxpayer and recognizes that there are no nationally-recognized accreditation programs for this field.

Another commenter requested clarification regarding how often the third-party preparation or verification of

the measurement and LCA must occur. The commenter suggested that the LCA should not need to be repeated unless the production process is changed in a manner that results in a significant increase in the total greenhouse gas emissions during production of the product. The IRS will publish separate procedural guidance that provides how often the third-party preparation or verification must occur.

G. LCA Report Submission and Review

The proposed regulations provided that a taxpayer must submit an LCA report to the IRS and the DOE, and that the LCA report would be subject to a technical review by the DOE. The proposed regulations further provided that the IRS, in consultation with the DOE and the EPA, would determine whether to approve the LCA report.

Commenters requested that the LCA review process be described in more detail. Commenters also suggested that the final regulations provide a defined review period for reviewing an LCA. One commenter recommended a 60-day review period for the IRS, DOE, and EPA to review a taxpayer's LCA.

Commenters suggested that the requirement to submit an LCA for review by the IRS, DOE, and EPA prior to a taxpayer claiming section 45Q credits is overly burdensome, contrary to statutory intent, and likely to result in significant approval delays, dampening commercial interest in utilization projects.

Commenters stated that the IRS should not condition a taxpayer claiming the section 45Q credit on pre-approval of the LCA. One commenter proposed that taxpayers be given the option of seeking advance approval of their LCAs prior to claiming section 45Q credits, or be allowed to claim section 45Q credits while accepting the risk that the credits may be deemed invalid depending on the outcome of the technical review process. Another commenter requested audit protection if pre-approval of LCAs is required.

Another commenter requested a formal interim process, in lieu of requiring pre-approval of LCAs, allowing taxpayers to work with the IRS, the DOE, and the EPA on specific utilization project details and credit claims. The goal of this process would be to provide insight into potential viability of taxpayer's utilization projects.

The final regulations provide that the taxpayer must submit the LCA report and third-party statement to the IRS and the DOE pursuant to the instructions to Form 8933 or other guidance issued by the IRS. The taxpayer must also submit

the model if an independent third-party review is not conducted. The final regulations also provide that each LCA report will be subject to a technical review by the DOE. After the completion of the technical review, the IRS will determine whether to approve the LCA and will send a notification to the taxpayer. The taxpayer must receive approval of its LCA prior to claiming the prior to claiming the section 45Q credits for such taxable year on any Federal income tax return. Pre-approval of the LCA is necessary to ensure taxpayers' compliance with the statute. In addition to receiving approval of its LCA, the final regulations require the taxpayer to satisfy all other requirements of section 45Q and sections 1.45Q-1, 1.45Q-2, and 1.45Q-4 in order to be eligible to claim section 45Q credits.

One commenter requested that pre-approval of an LCA should not be required prior to submission prior to filing a claim for a section 45Q credit on an amended return. According to the commenter, if it were, the taxpayer's claim may be limited by the statute of limitations before such approval is received. The final regulations provide that pre-approval of an LCA is required in all circumstances. Priority in the LCA review process will be given to prior tax years to address this concern.

Taxpayers may rely on these regulations to submit an LCA. However, the IRS will issue separate procedural guidance that provides additional details regarding the LCA submission and review process, including the length of time necessary for an LCA review. In response to comments, the IRS has streamlined the LCA review and approval process in these final regulations. The final regulations provide that the DOE will conduct a technical review of each LCA, and the IRS will determine whether to approve the LCA and will send notification to the taxpayer. The Treasury Department and the IRS will consult with the DOE and the EPA on general fact patterns and any future guidance.

One commenter suggested that the final regulations allow taxpayers to claim the section 45Q credit while an LCA is under review and provide a safe harbor to avoid a section 6662 penalty. The final regulations do not provide relief from any applicable penalties.

Another commenter requested a safe harbor permitting taxpayers to rely on an LCA that has been accepted or created by the EPA. The final regulations do not provide a safe harbor for an LCA that has been accepted or created by the EPA. An LCA accepted or created by the EPA may have been accepted or performed for different

purposes, separate and distinct from section 45Q. An LCA must be reviewed independently for compliance with section 45Q and these final regulations.

Commenters requested that taxpayers should be required to make their LCA report, application, and IRS approval public. One commenter requested that the applicant should be required to make public a written LCA report that was approved by the IRS. According to the commenter, this transparency would increase integrity and credibility in the section 45Q credit program. The final regulations do not require taxpayers or the third-party verifier to make an LCA report public, as the LCA report may contain confidential business information. As the DOE and the IRS review LCAs, the Treasury Department and the IRS will consider issuing future guidance regarding common fact patterns.

H. Displacement of Qualified Carbon Oxide

Under section 45Q(f)(5)(B), for purposes of determining the amount of qualified carbon oxide utilized by the taxpayer, such amount shall be equal to the metric tons of qualified carbon oxide which the taxpayer demonstrates, based upon an analysis of lifecycle greenhouse gas emissions, were (I) captured and permanently isolated from the atmosphere through use of a process described in section 45Q(f)(5)(A), or (II) displaced from being emitted into the atmosphere through use of a process described in section 45Q(f)(5)(A).

One commenter recommended eliminating the distinction between displacement and isolation, or explaining its meaning and significance. Another commenter stated that displacement is a term of art used in environmental guidance, referring to indirect reductions in greenhouse gases that result from comparing a process for utilizing qualified carbon oxide against baseline emissions of the processes in the same commercial market. This commenter stated that a rule considering qualified carbon oxide as the lesser of the amount measured at capture or the amount verified ignores the amount of qualified carbon oxide displaced from being emitted into the atmosphere. An LCA, however, takes into account the amount of qualified carbon oxide displaced in addition to the qualified carbon oxide captured and permanently isolated from the atmosphere.

One commenter described displacement as other non-captured carbon dioxide that was displaced by utilization of the captured carbon dioxide.

Another commenter asserted that the section 45Q credit should be available to taxpayers that capture carbon dioxide from an industrial process and recycle the carbon dioxide by selling it to commercial end users such as dry ice manufacturers or other commercial market uses that displace non-captured carbon dioxide.

One commenter also proposed that the best measurement of qualified carbon oxide being displaced would be to measure the difference between a base case without utilization and the section 45Q case that includes carbon oxide utilization.

The final regulations provide that a taxpayer must demonstrate, based on an LCA, that a utilization process leads to a reduction in carbon dioxide equivalents. As section 45Q(f)(5)(B) provides, this reduction may be achieved by capturing and permanently isolating qualified carbon oxide from the atmosphere through use of a process described in section 45Q(f)(5)(A), or by displacing the qualified carbon oxide from being emitted into the atmosphere through use of a process described in section 45Q(f)(5)(A). Displacement is a process which assumes that an existing product in the market will be substituted with the product from the carbon oxide utilization process. The products must be comparable. NETL's most recent guidance, "Carbon Dioxide Utilization Life Cycle Analysis Guidance for the U.S. DOE Office of Fossil Energy," can be found at http://www.netl.doe.gov/projects/files/NETLCO2ULCAGuidanceDocument_092019.pdf. The guidance defines displacement as, "[a] co-product management method in which the system boundary is first expanded to include each co-product. The LCA model results are generated for all systems, the multi-functional unit is then reduced to one-product functional unit, by removing one unwanted product and related impacts at a time until only the desired product is left."

I. Commercial Market

Section 45Q(f)(5)(A)(iii) provides that "utilization of qualified carbon oxide" means the use of 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 enhanced oil or natural gas recovery project), as determined by the Secretary. The proposed regulations did not define "any purpose for which a commercial market exists," and the Treasury Department and the IRS requested comments on this issue. Many commenters sought clarification regarding the meaning of use for "any

other purpose for which a commercial market exists."

Several commenters also requested expansive rules regarding commercial markets. For example, some commenters suggested that the IRS should publish a list of qualifying commercial markets, or a list of markets that do not qualify as commercial markets. However, one commenter recommended that the final regulations should not provide an exhaustive list of eligible markets.

Another commenter recommended that the Treasury Department and the IRS acknowledge the existence of specific commercial markets for captured carbon oxide, or describe the manner in which the Treasury Department and the IRS expect to make the determination of the existence of commercial markets, perhaps by defining the meaning of the term "commercial market" in the final regulations.

Some commenters suggested that the final regulations provide a broad, plain-language definition of this term. For example, commenters suggested that a use resulting in a good or service that is available for purchase by the public or nongovernmental entities should be deemed to constitute use for a purpose for which a commercial market exists. Some commenters recommended that the IRS look to the DOE's constellation of carbon dioxide uses and recognize each of these as a valid commercial market.

One commenter suggested that the commercial market provision only applies to a product, not a service. This commenter requested that the final regulations state that a product must be the end result of any approved utilization process that uses the qualified carbon oxide.

Another commenter stated that the final regulations should avoid suggesting that qualified carbon oxide must be physically or chemically incorporated into the final product or can only be used in production of a good, as opposed to a service.

A commenter suggested that utilization of qualified carbon oxide for any other purpose for which a commercial market exists occurs when the captured gases are used in a practical and effective way to produce a product.

Another commenter suggested that commercial markets should qualify categorically and not be subject to examination.

A commenter noted that secure storage is not a required element of commercial market use. Therefore, in the commenter's view, the sales covered

by section 45Q(f)(5)(A)(iii) must be: (i) Sales of captured carbon oxide, as such, or (ii) sales of a substance into which carbon oxide has been converted but is not securely stored.

One commenter recommended that the final regulations specifically recognize the many existing and potential uses for carbon dioxide in commercial markets, such as for building products, food production and refrigeration.

A commenter requested that the final regulations identify fuels, chemicals, and building materials as the primary categories of commercial markets for carbon oxide utilization. The commenter suggested that another category should be added for newly developed utilization technologies. Section 45Q allows the carbon capturer to elect to allow the section 45Q credit to the utilizer, which provides an opportunity for fledgling technologies to use the 45Q credit to support innovation in the field of carbon oxide utilization. The commenter noted that these technologies often have insufficient or incomplete data to perform an LCA, and the resulting data may be subject to high uncertainty. This category would allow for developing utilization techniques to benefit from the 45Q credit and allow for the government to track the carbon mitigating benefits of these new technologies. The commenter also suggested that a specific category for these new technologies could require regular updates to an LCA as relevant data becomes available. Further, the commenter stated that the economic viability of the business case must be considered, and suggested that supplemental information, such as a techno-economic assessment of the market viability, be provided for newly developed utilization technologies.

One commenter requested a definition sufficiently broad to encompass not only utilization processes resulting in consumer goods or products but also industrial-grade feedstocks, commodities, materials, and chemicals that may be used as an input for any purpose. Another commenter stated that the food and beverage industry is a significant commercial market for carbon dioxide utilization.

One commenter recommended that the final regulations require taxpayers to provide certain information to enable the IRS to determine whether a commercial market exists. The commenter suggested that a viable approach simply would be to allow a taxpayer to provide this information in a statement attached to its Form 8933. In addition, the commenter requested that the final regulations explicitly

provide that a commercial market includes a market for fuel. The commenter also stated that the IRS should provide more details about the process for determining whether a commercial market exists.

A commenter noted that the Secretary's discretion under section 45Q(f)(5)(A)(iii) is limited to determining whether a commercial market exists, and the Secretary does not have discretion to impose requirements as to the nature of the use of the carbon oxide by the market.

The final regulations define the term commercial market broadly as a market in which a product, process, or service that utilizes carbon oxide is sold or transacted on commercial terms. Section 45Q(f)(5)(A)(iii) suggests that the definition of a commercial market should not be limited to particular products or markets by using the phrase "for any other purpose for which a commercial market exists." Thus, the final regulations do not restrict the definition by limiting it to certain products or markets. Further, with the emergence of new technologies, markets are likely to develop and change rapidly. Consequently, the final regulations do not list particular products or markets that qualify or do not qualify as a commercial market.

In addition, carbon dioxide is commonly used for services, and section 45Q does not restrict the definition of commercial market to products. Therefore, the final regulations do not adopt the recommendation of commenters who suggested excluding services from the definition of commercial market.

Under section 45Q(f)(5)(A)(iii), the Secretary must determine whether a commercial market exists. In order to make this determination, the final regulations require a taxpayer to submit a statement attached to its Form 8933 substantiating that a commercial market exists for its particular product, process, or service. The instructions to the form or other guidance will provide more details regarding the information to be provided. This information should be retained by the taxpayer and may be reviewed during an examination.

J. Recapture and Utilization

Commenters requested that the regulations clarify whether the recapture provisions apply to utilization if a product that utilized qualified carbon dioxide releases the qualified carbon dioxide into the atmosphere when it is used, recycled, or disposed of.

One commenter recommended that the final regulations clarify that

permanent sequestration is not a prerequisite for carbon oxide utilized according to section 45Q(f)(5)(A) and that eventual emission into the atmosphere does not, in itself, subject the taxpayer to recapture provisions so long as the LCA accounts for a full project lifecycle analysis.

Under section 45Q(f)(4), recapture applies to any qualified carbon oxide which ceases to be captured, disposed of, or used as a tertiary injectant in a manner consistent with the requirements of this section, not to qualified carbon oxide that is utilized according to section 45Q(f)(5)(A). Further, recapture does not apply to utilization of qualified carbon oxide because an LCA accounts for all emissions of greenhouse gases throughout the life cycle of the utilized product. Therefore, the final regulations provide that a recapture event occurs when qualified carbon oxide for which a section 45Q credit has been previously claimed ceases to be disposed of in secure geological storage or used as a tertiary injectant during the recapture period. The final regulations do not provide for recapture when qualified carbon oxide is utilized.

K. Industries and Processes

One commenter requested that the final regulations specifically provide that qualified carbon dioxide captured by ethanol plants and utilized in the food and beverage industry is considered utilization of qualified carbon oxide under section 45Q(f)(5)(A).

A commenter requested that the final regulations define what types of utilization qualify as "fixation of qualified carbon oxide through photosynthesis or chemosynthesis, such as through the growing of algae or bacteria" as described in section 45Q(f)(5)(A). Another commenter requested that the final regulations find photosynthesis to be both a qualified carbon dioxide capture process and a qualified utilization process. Further, the commenter urged the IRS to recognize carbon oxide that is verifiably retained in solid form (organic or mineral) in the top 48 inches of the soil layer as "disposed of." The commenter asserted that regenerative agriculture processes should qualify for the section 45Q credit, as these processes are at a minimum carbon neutral. The commenter also recommended expanding section 45Q to include sustainable technologies such as microbial conversion technologies that use photosynthesis for the capture of carbon dioxide in soil.

A commenter sought guidance regarding the fermentation of sugar

waste products (desugarized molasses) in coal seams as an artificially-induced chemical synthesis process that produces substantial amounts of methane (CH₄) and carbon dioxide. The commenter asserted that the generation of carbon dioxide through the sugaring process and its subsequent sequestration or disposal in coal seams should qualify for the section 45Q credit.

A commenter suggested that the final regulations should clarify that the conversion of captured carbon dioxide to carbon monoxide is considered utilization of qualified carbon oxide under section 45Q(f)(5). The commenter explained that conversion of carbon dioxide to carbon monoxide should be considered the conversion of qualified carbon oxide to a chemical compound, in which the qualified carbon oxide (carbon dioxide) is securely stored and utilized. The commenter further requested that the IRS should consider utilization of carbon oxide, such as carbon monoxide, as a durable good or chemical feedstock in the production of durable goods as utilized and verified qualified carbon oxide.

The determination of whether particular technologies, processes, or industries qualify for the section 45Q credit exceeds the scope of these final regulations. However, the Treasury Department and the IRS will continue to consider these comments for purposes of potential future guidance regarding section 45Q.

V. Credit Recapture

The recapture rules in the proposed regulations applied on a project-by-project basis. Section 45Q(f)(4) directs the Secretary to provide regulations for recapturing the benefit of any section 45Q credit allowable with respect to any qualified carbon oxide which ceases to be captured, disposed of, or used as a tertiary injectant in a manner consistent with the requirements of section 45Q.

The proposed regulations provided that the period during which a recapture event may occur (recapture period) begins on the date of the first injection of qualified carbon oxide for disposal in secure geological storage or use as a tertiary injectant and ends the earlier of five years after the last taxable year in which the taxpayer claimed a section 45Q credit or the date monitoring ends under subpart RR requirements or the CSA/ANSI ISO 27916:2019 standard.

The proposed regulations provided that any recapture amount will be accounted for in the taxable year that it is identified and reported. If, during the recapture period, a taxpayer, operator, or regulatory agency determines that qualified carbon oxide has leaked to the

atmosphere, the taxpayer will have a recapture amount if the leaked amount of qualified carbon oxide exceeds the amount of qualified carbon dioxide disposed of in secure geological storage, including used as a tertiary injectant, in that taxable year. That excess amount of leaked qualified carbon oxide will be recaptured at a credit rate calculated on a LIFO basis (that is, the excess leaked qualified carbon oxide will be deemed attributable first to the first preceding year, then to second preceding year, and then up to the fifth preceding year) to simplify the calculation of the recapture amount.

The taxpayer must add the amount of the recaptured section 45Q tax credit to the amount of tax due in the taxable year in which the recapture event occurs. Consistent with this five-year lookback period, the proposed regulations provided that the post-credit-claiming period ends the earlier of (i) five years after the last taxable year in which the taxpayer claimed a section 45Q credit or (ii) the date monitoring ends under the requirements of the subpart RR standard or the CSA/ANSI ISO 27916:2019 standard.

The proposed regulations also provided that in the event of a recapture event for a secure geological storage location in which the stored qualified carbon oxide had been captured from more than one unit of carbon capture equipment that was not under common ownership, the recapture amount must be allocated among the taxpayers that own the multiple units of carbon capture equipment pro rata on the basis of the amount of qualified carbon oxide captured from each of the multiple units of carbon capture equipment.

Similarly, the proposed regulations provided that in the case of a recapture event where the leaked amount of qualified carbon oxide is deemed attributable to qualified carbon oxide for which multiple taxpayers claimed section 45Q credit amounts, the recapture amount is allocated on a pro rata basis among the taxpayers that claimed the section 45Q credits.

The proposed regulations provided a limited exception to recapture in the event of a leakage of qualified carbon oxide resulting from actions not related to the selection, operation, or maintenance of the storage facility, such as volcanic activity or a terrorist attack. Further, the proposed regulations provided that if qualified carbon oxide is deliberately removed from a secure storage site, a recapture event occurs in the year in which the qualified carbon oxide is removed from its original storage. Finally, section 5 of the Summary of Comments and Explanation

of Revisions to the proposed regulations noted that a taxpayer may obtain third-party recapture insurance to protect against recapture.

In the proposed regulations, the Treasury Department and the IRS requested comments on how to apply the recapture provisions to section 45Q credits that are carried forward to future taxable years due to insufficient income tax liability in the current taxable year.

A. Recapture Period

Several commenters approved of a five-year recapture period, noting that the Investment Tax Credit also provided for a five-year lookback period. However, many commenters suggested that a five-year recapture period is too long, and advocated limiting the recapture period to three years or to the most recent taxable year.

Several commenters were supportive of a three-year recapture period to be consistent with the statute of limitations for the IRS to initiate an audit of a tax year, thereby making the provision similarly situated with respect to other tax credits containing recapture provisions. One commenter noted that providing a three-year recapture period would improve tax and financial statement certainty for taxpayers claiming the section 45Q credit, thereby reducing the costs associated with tax equity transactions and in turn, further reducing the cost of CCUS projects. Ultimately, this commenter asserted that reducing the recapture period to three years would make the section 45Q credit more efficient and effective in inducing widespread investment in CCUS projects.

One commenter noted that it takes less than three years for carbon dioxide injected into an underground reservoir to become stable. This commenter noted that once carbon dioxide has stabilized, the carbon dioxide is unlikely to escape to the atmosphere. Because injected carbon dioxide stabilizes in less than three years, this commenter advocated for a three-year recapture period as sufficient for purposes of recapture. Generally, commenters advocating for a shorter recapture period pointed out that the International Panel on Climate Change's 2005 Special Report, available at <http://www.ipcc.ch/report/carbon-dioxide-capture-and-storage/>, stated that carbon dioxide retained in appropriately selected and managed geological reservoirs is very likely to exceed 99 percent secured storage over 100 years and is likely to exceed 99 percent secured storage over 1000 years. Therefore, the commenters suggested that no technical reasons exist for a

recapture period of greater than one year.

However, one commenter suggested that the final regulations adopt a 99-year recapture period, because a 99-year recapture period is practical and commercially feasible compared to geological time scales and other commercial transactions that occur over a span of 99 years, such as ground leases of land. The commenter stated that sequestration of carbon oxide for 99 years also furthers the policy intent of section 45Q to have some real and measurable effect on global warming and global climate change.

The final regulations revise the recapture period from five years to three years. The risk of qualified carbon oxide leakage leading to a recapture event is greatest in the years in which the qualified carbon oxide is injected, and the likelihood decreases over time as the qualified carbon oxide becomes stable and the likelihood of leakage decreases. A three-year recapture period sufficiently accounts for risk and reduces the compliance burden that would be imposed by a five-year recapture period.

B. Exceptions To Recapture

In response to the proposed regulations, commenters recommended that the final regulations expand the limited exceptions to recapture (for volcanic activity and terrorist attacks) specified in the proposed regulations, to include such situations as seismic activity that was not caused by the injection operations; natural disasters, including but not limited to floods, droughts, earthquakes, volcanic eruptions, landslides, hurricanes, cyclones, typhoons, and tornados; and wars, civil disturbances, terrorist acts, military actions, epidemics, pandemics, famines, and actions of a governmental authority.

A commenter suggested that the final regulations provide that the recapture exception include all events outside of the taxpayer's control. Another commenter suggested that the limited exceptions to recapture be eliminated entirely because any leakage of qualified carbon oxide for any reason should be subject to recapture.

A commenter suggested that for Class VI permit holders (*i.e.*, reporting under subpart RR with an MRV plan), leaked qualified carbon oxide should not be treated as related to the selection, operation, or maintenance of the storage facility.

The final regulations do not expand the list of exceptions to recapture. The list of exceptions to recapture in the proposed regulations is illustrative only.

C. Recapture of Credit Carryforwards

A commenter suggested that the final regulations should explain how credit carryforwards and tentative tax values applicable to section 38 are accounted for when determining the actual tax benefit under section 45Q. The commenter suggested that if the taxpayer has other available credits in the year in which the recapture event occurs, such other section 38 credits should apply to offset the recapture amount.

A commenter suggested that the final regulations provide that the carryforward of the credit does not affect the recapture period, recommending that the final regulations revise § 1.45Q-5(f) of the proposed regulations to clarify that the recapture period ends five years after the last taxable year in which the taxpayer claimed a section 45Q credit or was eligible to claim a section 45Q credit which it carried forward.

The final regulations take the recapture of credit into account in the year in which the leakage occurs and is reported. The credit carryforwards should not be affected. In addition, the final regulations provide that the recapture period ends on the earlier of three years after the last taxable year in which the taxpayer claimed a section 45Q credit or was eligible to claim a credit that it elected to carry forward or the expiration of the monitoring period.

D. Recapture in the Event of Deliberate Removal from Storage

Commenters requested clarification concerning when qualified carbon oxide is deliberately removed from secure geological storage. One commenter noted that neither the definition nor the examples detailed in § 1.45Q-5 of the proposed regulations address whether qualified carbon oxide that is recycled and reinjected during EOR operations would be considered as having been intentionally removed from storage. The commenter recommended adding specific examples of using qualified carbon oxide as a tertiary injectant in EOR, the provisions for recycled and reinjected qualified carbon oxide, and the consequent last-in-first-out (LIFO) accounting basis for the qualified carbon oxide.

CSA/ANSI ISO 27916:2019 provides guidance for determining the character of the removed carbon oxide. Consequently, this comment is addressed through subpart RR and ISO 27916:2019 and not addressed further in the final regulations.

A commenter requested further clarity regarding the applicability of the

recapture rules to the intentional removal of securely stored qualified carbon oxide, and the subsequent recapture and secure storage of that same qualified carbon oxide, noting that the total net release of qualified carbon oxide in this process is zero. The commenter provided an example of when a natural gas and oil company might undertake this process, such as when EOR injectors intentionally remove previously secured carbon dioxide and then subsequently reinject it into the ground after having completed the extraction of all commercially viable oil. The commenter requested the final regulations state this explicitly and provide an example to clarify that the net calculation yields no credit recapture.

If a taxpayer intentionally removes qualified carbon oxide from a qualified enhanced oil or natural gas recovery project and reinjects it into the same qualified enhanced oil or natural gas recovery project, that intentional removal will not trigger a recapture event. However, if the qualified carbon oxide is instead injected into a different qualified enhanced oil or natural gas recovery project, such intentional removal would trigger a recapture event.

Another commenter suggested that the final regulations be revised to state explicitly that each disposal well or EOR site is separately evaluated for recapture. Subpart RR and CSA/ANSI ISO 27916:2019 provide guidance for monitoring sites where qualified carbon oxide is securely stored. These standards identify the scope of a secure storage project. In addition, section 43(c)(2) defines the scope of an EOR project. The proposed regulations provided that recapture events are determined separately for each project involving the disposal or use of qualified carbon oxide as a tertiary injectant an EOR project. Because taxpayers disposing of or using qualified carbon oxide in such projects are required to follow the provisions of either Subpart RR or ISO 27916:2019 and section 43, the term "project" provided in the proposed regulations is one that taxpayers are familiar with. The final regulations follow the rule in the proposed regulations, and thus, there is no need for revision in response to this comment.

E. Miscellaneous Recapture Issues

A commenter requested that the final regulations clarify that recapture of section 45Q credits does not have any bearing upon the minimum threshold capture levels under section 45Q(d)(2), and, therefore, does not cause a facility to retroactively fail to be a qualified

facility. The recapture provisions apply to the amount of credit to which the taxpayer is entitled in a given year, and do not apply to determine how much qualified carbon oxide was captured and disposed of, used, or utilized in a given year. Because the amount of qualified carbon oxide is measured and verified using mass balance accounting, it is possible for a taxpayer to track the number of metric tons captured and disposed of or used as a tertiary injectant before netting to account for the amount of carbon that leaked in the year. The methodology of netting leaked carbon oxide against captured qualified carbon oxide in a given year does not preclude a facility from being considered a qualified facility, provided the capture threshold is satisfied before the netting occurs.

A commenter suggested that leakage of both qualified and non-qualified carbon oxide may need to be taken into account on a pro rata basis and recommended that the final regulations include examples to illustrate this. CSA/ANSI ISO 27916:2019 provides guidance regarding allocations when both qualified anthropogenic and natural carbon dioxide has been injected in prior or current years. Consequently, this comment is addressed through subpart RR and ISO 27916:2019 and not addressed further in the final regulations.

A commenter disagreed with the use of the last-in-first-out method of calculating the recapture values, and recommended calculating recapture percentages based on apportioning leakage by year of injection. The final regulations do not adopt this comment, and instead retain the last-in-first-out method of calculation. The last-in-first-out method promotes administrative ease, and further reflects the fact that carbon oxide is at the greatest risk of leakage shortly after it is initially disposed of or used as a tertiary injectant.

One commenter requested that the final regulations provide that recapture does not apply to storage sites holding a valid Class VI permit. The commenter suggested that any loss of containment of qualified carbon oxide from a Class VI storage site should be treated as resulting from an action unrelated to the selection, operation or maintenance of the storage facility.

The final regulations provide that a recapture event can occur for qualified carbon oxide that has been disposed of or used as a tertiary injectant, including at a Class VI storage site. The final regulations do not exempt Class VI permit holders from the possibility of experiencing a recapture event, even if

the permit holder has complied with all of the requirements of maintaining a Class VI storage site.

Commenters sought to clarify whether qualified carbon oxide is subject to the recapture provisions if it migrates or otherwise leaves its primary containment zone but does not leak into the atmosphere. These commenters suggested that a recapture event occurs only when the qualified carbon oxide has leaked to the atmosphere, but not when it has migrated from the containment zone.

Subpart RR and CSA/ANSI ISO 27916:2019 each provide methodologies for monitoring and reporting the secure storage of qualified carbon oxide. Accordingly, this issue is addressed in subpart RR and CSA/ANSI ISO 27916:2019 and is not addressed further in the final regulations.

A commenter suggested that the final regulations should include a limited remedial action and cure period to avoid credit recapture. The commenter requested an opportunity to dispose of or inject metric tons of qualified carbon oxide in secure geologic storage during the post-credit-claiming period, not claim a section 45Q credit for those metric tons, and subtract those metric tons from the quantity of recaptured qualified carbon oxide. The commenter explained that allowing the operator the opportunity to cure a recapture event with remedial action during the post-credit-claiming period should be an alternative method to resolve a recapture event, and to resolve it in such a way that results in greater amounts of ultimate disposal and injection of qualified carbon oxide. The final regulations do not allow for taxpayers to perform remedial actions or otherwise cure a leak to avoid credit recapture because such a provision would significantly lessen the consequences faced by taxpayers that allow qualified carbon oxide to leak to the atmosphere.

VI. Miscellaneous Issues

A. Pre-Combustion of Coal, Biomass or Other Carbon-Based Fuel

One commenter requested that the definition of “industrial facility” be clarified to include any facility designed for the purpose of capturing qualified carbon oxide as a part of its operations, including when upgrading coal, biomass or any other carbon-based fuel. The commenter stated that given the evolving technologies in the carbon capture area, the final regulations should recognize that any type of pre-combustion, post-combustion, direct air capture or any combination thereof that

captures qualified carbon oxide should qualify under section 45Q so long as such process (i) allows for quantities of qualified carbon oxide to be measured at the source of capture and verified at the point of disposal, injection or utilization and (ii) the taxpayer otherwise satisfies the requirements of section 45Q. The commenter described a facility that will substantially upgrade coal or biomass with higher quality volatile matter, increased BTU content, lower moisture content and lower amount of pollutants. With the upgraded fuel, a power plant will require approximately 20–25 percent less fuel to generate the same amount of electricity. The upgraded coal or biomass produced by the facility will be much a higher ranked and a much improved fuel type than what a supplier would otherwise supply to a power plant or industrial facility.

Whether specific industries and processes may qualify for the section 45Q credit is highly factual and exceeds the scope of these final regulations. Generally, however, a process involving the manufacture of a product that does not produce an emission of carbon oxides that can be captured and disposed of, injected, or utilized until the product is consumed, would not qualify for the section 45Q credit. Conversely, a process involving the manufacture of a product that does produce an emission of carbon oxides that can be captured, and disposed of, injected, or utilized immediately may qualify for the section 45Q credit.

B. Additional Carbon Capture Capacity

One commenter sought clarification concerning how to measure additional carbon capture capacity. The commenter suggested that the carbon dioxide capture capacity should be calculated on an annual basis and define carbon dioxide capture capacity as the capability (metric tons per year) to capture carbon dioxide less the annualized typical constraints with the industrial facility and carbon capture equipment. The commenter further suggested that the definition should provide that annualized typical constraints means the quotient of the total amount of all regular maintenance, scheduled or unscheduled facility downtime, seasonal fluctuations in outdoor temperature, and turn-arounds associated with both the industrial facility and carbon capture equipment occurring in the 60 months prior to the day before the date of the enactment of the BBA divided by five.

The final regulations do not adopt this comment. Different units of carbon capture equipment operate at different efficiencies and their capture levels are

subject to operational variations of the qualified facilities at which they are installed. Applying a subjective standard that takes into account historical capture amounts rather than true potential capture capacity would make it difficult to apply the rules for additional carbon capture equipment in a consistent manner. The capture design capacity of carbon capture equipment reflects an objective measure of the equipment's carbon capture capacity. Accordingly, the final regulations provide that the carbon capture capacity of carbon capture equipment is its capture design capacity.

C. Capture and Utilization—Photosynthesis

One commenter requested that the final regulations clarify that photosynthesis is both a qualified carbon oxide capture process and a qualified carbon oxide utilization under section 45Q. Further, the commenter urged the DOE and the IRS to recognize carbon that is verifiably retained in solid (organic or mineral) form in the top 48 inches of the soil layer as “disposed.” The commenter stated that section 45Q(f)(5)(A)(i) provides that photosynthesis is a possible method of utilization, and section 45Q(e)(1)(B)(ii) specifically excludes photosynthesis from being considered a direct air capture facility. The Treasury Department and the IRS do not agree with the commenter. The final regulations do not address photosynthesis further because the Code makes clear the avenues, such as utilization, for using such process to qualify for the credit.

D. Beginning of Construction

Several commentators requested changes to Notice 2020–12, concerning the beginning of construction, such as an extension of the continuity safe harbor from six to eight years, relaxation of the prohibition on combining methods to satisfy the continuing requirement, and revisions to the examples of physical work and the list of preliminary activities. Commenters also requested extending the deadline for beginning of construction by one year in response to the impact of COVID–19, as has been done for the investment tax credit and production tax credit.

A commenter recommended that the IRS issue guidance providing that the work described in section 5.02(2)(d) of Notice 2020–12 be treated as on-site work of a significant nature only at the election of the taxpayer. Other commenters recommended harmonizing

certain provisions of Notice 2020–12 and the proposed regulations.

These comments exceed the scope of these final regulations, but the Treasury Department and the IRS will continue to consider these comments for purposes of potential future guidance regarding section 45Q.

E. Partnerships and Economic Substance

Commenters requested clarifications to the partnership guidance provided in Revenue Procedure 2020–12. Commenters recommended that, in the event of a section 45Q(f)(3)(B) election, Revenue Procedure 2020–12 should apply to any credit claimant without presuming the person claiming the credit will always be the owner of the carbon capture equipment.

A commenter recommended striking section 4.02(2)(b) of Revenue Procedure 2020–12, or for subsequent guidance to expand the definition of “bona fide equity investment” to include investors reasonably anticipating a return derived from tax credits and cash flow.

These comments exceed the scope of these final regulations, but the Treasury Department and the IRS will consider these comments for purposes of potential future guidance regarding section 45Q.

Commenters requested clarification of the application of the economic substance doctrine and the provisions of section 7701(e) to the section 45Q credit. Commenters recommended the final regulations provide that the economic substance doctrine and section 7701(o) do not apply to carbon capture projects eligible for the credit under section 45Q. The final regulations do not deviate from well-established guidance regarding the economic substance doctrine.

Effect on Other Documents

Sections 1 through 5 of Notice 2009–83, 2009–2 C.B. 588, as modified by Notice 2011–25, 2011–1 C.B. 604, are obsolete. The remaining sections of Notice 2009–83 provide reporting and recordkeeping requirements associated with the limitation on credits available under section 45Q(a) (as in effect before February 9, 2018) and sections 45Q(a)(1) and (2). After the end of the calendar year in which the Secretary, in consultation with the Administrator of the EPA, certifies that a total of 75,000,000 metric tons of qualified carbon oxide have been taken into account under former section 45Q(a) (as in effect before February 9, 2018) and sections 45Q(a)(1) and (2), the remaining sections of Notice 2009–83 will be obsolete.

Applicability Date

The final regulations apply to taxable years beginning on or after January 13, 2021. However, a taxpayer may choose to apply the final regulations, provided that the taxpayer applies the final regulations in their entirety and in a consistent manner, for taxable years beginning on or after January 1, 2018, and before January 13, 2021. See section 7805(b)(7).

Special Analyses

I. Regulatory Planning and Review—Economic Analysis

Executive Orders 13563, 13771, and 12866 direct agencies to assess costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects, distributive impacts, and equity). Executive Order 13563 emphasizes the importance of quantifying both costs and benefits, of reducing costs, of harmonizing rules, and of promoting flexibility.

These regulations have been designated by the Office of Management and Budget's Office of Information and Regulatory Affairs as economically significant under Executive Order 12866 pursuant to the Memorandum of Agreement (April 11, 2018) between the Treasury Department and the Office of Management and Budget regarding review of tax regulations.

A. Background and Overview

Section 45Q was enacted on October 3, 2008 by section 115 of Division B of the Energy Improvement and Extension Act of 2008, Public Law 110–343, 122 Stat. 3765, 3829, to provide a credit for the sequestration of carbon dioxide. On February 17, 2009, section 45Q was amended by section 1131 of Division B of the American Recovery and Reinvestment Tax Act of 2009, Public Law 111–5, 123 Stat 115, 325. Section 45Q was further amended on December 19, 2014, by section 209(j)(1) of Division A of the Tax Increase Prevention Act of 2014, Public Law 113–295, 128 Stat. 4010, 4030, and again on February 9, 2018, by section 41119 of Division D of the Bipartisan Budget Act of 2018 (BBA), Public Law 115–123, 132 Stat. 64, 162, to encourage the construction and use of carbon capture and sequestration projects. On December 27, 2020, section 45Q was amended by section 121 of the Taxpayer Certainty and Disaster Tax Relief Act of 2020, enacted as Division EE of the Consolidated Appropriations Act, 2021,

Public Law 116–260, 134 Stat. 1182, 3051, to extend the beginning of construction deadline for qualified facilities and carbon capture equipment by two years.

On June 2, 2020, the Treasury Department and the IRS published a notice of proposed rulemaking (REG–112339–19) in the **Federal Register** (85 FR 34050) containing proposed regulations under section 45Q (proposed regulations). The Treasury Department and the IRS received written and electronic comments responding to the proposed regulations. A public hearing on the Proposed Regulations was held on August 26, 2020. In addition, the Treasury Department and the IRS published Rev. Proc. 2020–12, 2020–11 I.R.B. 511, and Notice 2020–12, 2020–11 I.R.B. 495. Revenue Procedure 2020–12 provides a safe harbor under which the IRS will treat partnerships as properly allocating the section 45Q credit in accordance with section 704(b). Notice 2020–12 provides guidance on the determination of when construction has begun on a qualified facility or on carbon capture equipment that may be eligible for the section 45Q credit.

Section 45Q generally allows a credit of an amount per metric ton of qualified carbon oxide captured by the taxpayer using carbon capture equipment and permanently isolated from the environment. This qualified carbon oxide must be securely stored according to the statute in one of three general manners. First, it may be disposed of in secure geological storage. This would occur if it were injected into a geologic formation, such as a deep saline formation, an oil and gas reservoir, or an unminable coal seam.

Second, the qualified carbon oxide may be used as a tertiary injectant in a qualified enhanced oil or natural gas recovery project and disposed of in secure geological storage. A “tertiary injectant” is qualified carbon oxide that is injected into and stored in a qualified enhanced oil or natural gas recovery project and contributes to the extraction of crude oil or natural gas.

Third, the qualified carbon oxide may be “utilized” by fixing it through photosynthesis or chemosynthesis, thus converting it to a material or chemical compound in which it is securely stored, or using it for any other purpose for which a commercial market exists. “Utilization” generally means the qualified carbon oxide was captured and permanently isolated from the atmosphere, or displaced from being emitted into the atmosphere.

The amount of the credit depends on the date the carbon capture equipment

is placed in service and whether the qualified carbon oxide is disposed of in secure storage, injected, or utilized. Different rules and credit amounts apply to qualified carbon oxide capture projects placed in service before and after the date the enactment of the BBA on February 9, 2018. Based on annual reports filed with the IRS as of June 2020, the aggregate amount of qualified carbon oxide taken into account for purposes of section 45Q was 72,087,903 metric tons as published in Notice 2020–40. This is an increase of 9,935,153 metric tons from the preceding year. According to data reported to the EPA’s Greenhouse Gas Reporting Program (GHGRP), there were 65 enhanced oil recovery (EOR) projects operating in the U.S. in 2018. As of 2019, the National Petroleum Council, an oil and natural gas advisory committee to the Secretary of Energy, reports that there were 10 carbon capture, utilization, and storage projects in the United States. DOE models project that the section 45Q credit may result in the sequestration of approximately 570 million metric tons of carbon oxide between 2018 and 2036.

B. Need for the Final Regulations

The final regulations provide guidance regarding the application of section 45Q. Section 45Q requires regulations for determining adequate security measures for the secure geological storage of qualified carbon oxide such that it does not escape into the atmosphere, standards for recapture of section 45Q credits, standards for determining what is a qualified facility for purposes of meeting certain minimum carbon capture thresholds, and standards for carbon oxide utilization.

C. Economic Analysis

1. Baseline

In this analysis, the Treasury Department and the IRS assess the economic impacts of the final regulations relative to a no-action baseline reflecting anticipated Federal income tax-related behavior in the absence of these regulations.

2. Summary of Economic Effects

These final regulations provide taxpayers with greater clarity regarding the definition of terms contained in the statute relative to the alternative of taxpayers having no further descriptions than the statute; more flexibility in methods to establish qualifications for the credit relative to prior guidance; and more transparency regarding business arrangements related to the section 45Q

credit relative to the no-action baseline. These features may lower compliance burden and increase economic investment by lowering regulatory barriers to entry, compared to a baseline of having only the statute and not the regulations.

3. Economic Analysis of Specific Provisions

i. Standards for Secure Geological Storage

a. Background

Section 45Q(f)(2) provides that the Secretary, in consultation with the Administrator of the EPA, the Secretary of Energy, and the Secretary of the Interior, must establish regulations for determining adequate security measures for the secure geological storage of qualified carbon oxide under section 45Q such that qualified carbon oxide does not escape into the atmosphere. Such term includes storage at deep saline formations, oil and gas reservoirs, and unminable coal seams under such conditions as the Secretary may determine under such regulations.

Under existing law, injection of carbon oxide into any underground reservoir requires the operator to comply with Underground Injection Control (UIC) program regulations under the Safe Drinking Water Act and to obtain the appropriate UIC well permits. The UIC program is designed to protect underground sources of drinking water from underground injection. Operators that inject carbon dioxide underground are also subject to the EPA’s GHGRP requirements set forth at 40 CFR part 98.

Under 40 CFR part 98, facilities that inject carbon dioxide underground for long-term containment of carbon dioxide in subsurface geologic formations are specifically subject to 40 CFR part 98 subpart RR (Geologic Sequestration of Carbon Dioxide source category, referred to as “subpart RR”). Facilities that are subject to subpart RR, including UIC Class VI wells, are required to report basic information on carbon dioxide received for injection, develop and implement an EPA-approved site-specific Monitoring, Reporting, and Verification Plan (MRV Plans), and report the amount of carbon dioxide geologically sequestered using a mass balance approach and annual monitoring activities.

Facilities that inject carbon dioxide underground for the purposes of enhanced oil (EOR) and gas recovery or any other purpose other than geologic sequestration are required to report basic information on carbon dioxide received for injection under 40 CFR part 98 subpart UU (Injection of Carbon

Dioxide source category, referred to as “subpart UU”). At present, the EPA generally does not require facilities that conduct EOR to report under subpart RR. However, the owner or operator may choose to opt in to subpart RR. For both subparts RR and UU, annual reports are submitted under 40 CFR part 98 to the EPA’s GHGRP and undergo verification by the EPA. Non-confidential data from these reports are published on the EPA’s website.

b. Comments Received

Commenters generally supported the continued use of subpart RR. Many commenters supported the adoption of the standard adopted by the International Organization for Standardization (ISO) and endorsed by the American National Standards Institute (ANSI), CSA/ANSI ISO 27916:2019 standard, “Carbon dioxide capture, transportation and geological storage—Carbon dioxide storage using enhanced oil recovery (CO₂-EOR),” (CSA/ANSI ISO 27916:2019) (the “CSA/ANSI ISO 27916:2019 standard”) as a viable alternative to subpart RR for establishing secure geological storage for the use of qualified carbon oxide for EOR. The CSA/ANSI ISO 27916:2019 standard was developed for the purpose of quantifying and documenting the total carbon dioxide that is stored in association with carbon dioxide-EOR. In general, reporting under CSA/ANSI ISO 27916:2019 (i) uses mass balance accounting, (ii) has established reporting and documentation requirements, and (iii) includes requirements for documenting a monitoring program and a containment assurance plan. ANSI, a not-for-profit organization dedicated to supporting the U.S. voluntary standards and conformity assessment system, adopted the CSA/ANSI ISO 27916:2019 standard in 2019.

c. Regulatory Alternatives and Analysis

The Treasury Department and the IRS considered three options for defining standards for secure geological storage: (i) The requirements set forth in 40 CFR part 98 subpart RR; (ii) an election for the taxpayer to comply with either the subpart RR standards or the requirements set forth in CSA/ANSI ISO 27916:2019 and (iii) other alternatives to subpart RR, including allowing use of state programs.

In evaluating option (ii), the Treasury Department and the IRS, in consultation with the EPA, the DOE, and the Interior Department, agree with commenters that CSA/ANSI ISO 27916:2019 is a viable quantification methodology that is adequate for the intent and purpose of

the statute. Both subpart RR and CSA/ANSI ISO 27916:2019 require an assessment and monitoring of potential leakage pathways; quantification of inputs, losses and storage through a mass balance approach; and documentation of steps and approaches. Under option (ii), operators of UIC Class II wells that follow the CSA/ANSI ISO 27916:2019 standard could elect to report under subpart RR but would not be required to do so. Rather, they could continue to report to the EPA under subpart UU.

The Treasury Department and the IRS, in consultation with the EPA, the DOE, and the Interior Department, disagree with commenters’ suggestions to allow the reporting rules promulgated by states as an alternative to subpart RR or CSA/ANSI ISO 27916:2019. Reporting rules among states are not uniform and states may have different reporting requirements and different governing bodies to whom carbon dioxide injection projects are required to report. The adoption of such rules by the Treasury Department and the IRS would substantially increase the administrative burden on the IRS. The Treasury Department and the IRS did not attempt to determine to what extent particular states’ standards would fulfill the intent and purpose of the statute.

The ability for taxpayers to elect to use the CSA/ANSI ISO 27916:2019 standard instead of subpart RR could yield economic differences in three ways. First, if the two standards are different in their costs of compliance, then allowing a choice allows EOR project operators to choose the less costly standard. This would reduce costs of compliance and regulatory burden. Second, to the extent that the difference in compliance costs between the two standards is high and that difference is a significant portion of start-up costs, then allowing a less expensive standard might lead to more investment and more new projects. Third, operators can use the option that best aligns with their project goals and timeframes. The Treasury Department and the IRS project that compliance costs for some taxpayers may be lower under the CSA/ANSI ISO 27916:2019 standard than under subpart RR. Some commenters stated that subpart RR may create a misalignment for UIC Class II wells with both state mineral property and natural resource conservation laws; and that such potential misalignment would be costly to taxpayers. This stated misalignment would not be implicated with the use of the ISO standards.

The Treasury Department and the IRS recognize that the two standards differ

in terms of who would be responsible for reviewing and approving a sequestration plan and for identifying leakage once a project is in place. In addition, the standards differ because unless otherwise required by law, the CSA/ANSI ISO 27916:2019 standard does not require public reports of the amount of qualified carbon oxide sequestered, whereas the subpart RR standard does entail the public provision of such data. The Treasury Department and the IRS did not attempt to analyze the economic consequences of these differences.

The Treasury Department and the IRS did not attempt to provide quantitative estimates of the difference in compliance costs between the CSA/ANSI ISO 27916:2019 standard and a regulatory alternative of requiring only subpart RR because suitable data are not readily available at this level of detail. Further, the Treasury Department and IRS did not attempt to estimate the effects of compliance cost differences on investment or sequestration.

ii. Credit Recapture

Section 45Q(f)(4) requires the Treasury Department and the IRS to promulgate regulations to provide for the recapture of section 45Q credits in the event of leakage. “Recapture” refers to the repayment of the tax credits claimed, and not to the capturing of carbon dioxide that may have leaked from the project after being injected. The final regulations provide clarification regarding credit recapture, including (i) when the tax would be due in relation to the year of a recapture event, (ii) how long the IRS can “look back” to recapture credits in the event of leakage (lookback period), and (iii) the length of time after ceasing to claim credits during which a leakage event would lead to recapture of credits.

All of these issues require a definition of the recapture period. The proposed regulations provided that the recapture period begins on the date of the first injection of qualified carbon oxide for disposal in secure geological storage or use as a tertiary injectant and ends the earlier of a specified number of years after the last taxable year in which the taxpayer claimed a section 45Q credit or the date monitoring ends under subpart RR requirements or the CSA/ANSI ISO 27916:2019 standard.

Thus, under the proposed regulations, the recapture period consists of two sub-portions, the “post-credit-claiming period” and the “lookback period.” The “post-credit-claiming period” is the lesser of a specified number of years after the last taxable year in which the taxpayer claimed a section 45Q credit or

the date monitoring ends under subpart RR requirements or the CSA/ANSI ISO 27916:2019 standard. Depending on the project's individual requirements, the post-credit-claiming period is therefore between zero and the specified number of years. The "lookback period" is the portion of the recapture period during which the IRS can recapture section 45Q credits after a leakage event. A leakage event that leads to recapture of credits can occur any time during the recapture period. A leakage event that occurs after the recapture period would not lead to recapture of credits.

The proposed regulations provided that any recapture amount will be accounted for in the taxable year that it is identified and reported. The amount of credits that can be recaptured in the event of leakage depends on the length of the lookback period and the amount of the leakage.

If, during the recapture period, it is determined that qualified carbon oxide has leaked to the atmosphere, the taxpayer will have a recapture amount if the leaked amount of qualified carbon oxide exceeds the amount of qualified carbon dioxide disposed of in secure geological storage, including used as a tertiary injectant, in that taxable year. That excess amount of leaked qualified carbon oxide will be recaptured at a credit rate calculated on a LIFO basis (that is, such excess leaked qualified carbon oxide will be deemed attributable first to the first preceding year, then to second preceding year, and so forth up to five years) for ease of administration. The taxpayer must add the amount of the recaptured section 45Q tax credit to the amount of tax due in the taxable year in which the recapture event occurs. This rule applies regardless of whether the project injected qualified carbon oxide in the taxable year. In the proposed regulations, the "post-credit-claiming period" was specified to be the lesser of five years after the last taxable year in which the taxpayer claimed a section 45Q credit or the date monitoring ends under subpart RR requirements or the CSA/ANSI ISO 27916:2019 standard. In response to the proposed regulations, commenters expressed concerns with the length of the lookback period after the project operator stops claiming section 45Q credits (for example, if the project is finished or the period for claiming credits ends) that a leakage event can lead to recapture.

Commenters were concerned that investors would deem the risk too high to invest in carbon capture equipment if the end of the recapture period extended too long after the final year of claiming section 45Q credits. To address

this concern, the final regulations provide that the recapture period begins on the date of first injection of qualified carbon oxide for disposal in secure geological storage or use as a tertiary injectant and ends the earlier of three (instead of five) years after the last taxable year in which the taxpayer claimed a section 45Q credit or the date monitoring ends under subpart RR requirements or the CSA/ANSI ISO 27916:2019 standard.

The Treasury Department and the IRS considered alternative specifications for the recapture period other than three years. Open-ended or undefined recapture periods would increase the financial risk associated with the project and dissuade investors, particularly for projects for which the section 45Q credit would constitute a sizeable share of revenue. By allowing for a specific and finite lookback period, the final regulations will encourage more investment in projects relative to an unspecified or infinite period. The Treasury Department and the IRS, in consultation with the EPA, the DOE, and the Interior Department, have determined that for the period after the lookback period, existing environmental regulations and standards, such as subpart RR and CSA/ANSI ISO 27916:2019, which taxpayers will need to follow to be entitled to the section 45Q credit, will ensure integrity consistent with the intent and purpose of the statute. A three-year recapture period sufficiently accounts for risk and reduces the compliance burden that would be imposed by a five-year recapture period. Further, a three-year recapture period is consistent with the statutory period for assessing Federal income taxes.

In examining possible recapture periods, the Treasury Department and the IRS have not developed a quantitative model to incorporate the costs of monitoring and the probability of leakage along with the tax administration burden involved in the recapture period.

iii. Aggregation of Qualified Facilities

Section 45Q(d) requires that qualified facilities include carbon capture equipment that meet certain minimum carbon oxide capture thresholds. Electricity generating facilities that emit more than 500,000 metric tons of carbon oxide each year must include carbon capture equipment that captures at least 500,000 metric tons of carbon oxide during the taxable year to qualify for the credit.

Commenters sought additional guidance on whether and under what conditions emissions from multiple

facilities may be aggregated for purposes of meeting the qualified carbon capture threshold amounts for qualified facilities. Commenters recommended various ways to aggregate including allowing aggregation for facilities owned within the same affiliated group or allowing aggregation based on existing "single project" factors used in the 45Q beginning of construction guidance. Such guidance allows multiple facilities to be treated as a single facility for purposes of beginning construction if various factors are present, such as: Same ownership; same physical location; developed under single plan; and constructed under single permit.

The final regulations allow smaller carbon capture facilities to be aggregated into one project for purposes of claiming the section 45Q credit based on the facts and circumstances of each project consistent with section 8.01 of IRS Notice 2020-12, such as common ownership and location.

By providing greater clarity regarding aggregation of smaller projects to be able to claim the credit, the final regulations generate an economic gain. The Treasury Department and the IRS project that this clarity will encourage additional investment in carbon sequestration projects relative to the no-action baseline.

iv. Utilization of Qualified Carbon Oxide

Section 45Q(f)(5)(A) provides that "utilization of qualified carbon oxide" means (i) the fixation of such qualified carbon oxide through photosynthesis or chemosynthesis, such as through the growing of algae or bacteria; (ii) the chemical conversion of such qualified carbon oxide to a material or chemical compound in which such qualified carbon oxide is securely stored; or (iii) the use of 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 enhanced oil or natural gas recovery project), as determined by the Secretary.

Section 45Q(f)(5)(B) provides a methodology to determine the amount of qualified carbon oxide utilized by the taxpayer. Such amount is equal to the metric tons 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 the Secretary of Energy and the 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 section 45Q(f)(5)(A). 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)(H)), as in effect on the date of enactment of the BBA on February 9, 2018, except that “product” is substituted for “fuel” each place it appears in such subparagraph.

The term “lifecycle greenhouse gas emissions” means the aggregate quantity of greenhouse gas emissions (including direct emissions and significant indirect emissions such as significant emissions from land use changes), related to the full product lifecycle, including all stages of product and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished product to the ultimate consumer, where the mass values for all greenhouse gases are adjusted to account for their relative global warming potential.

Commenters proposed multiple methods for the Treasury Department and the IRS to allow for calculating “utilization” of qualified carbon oxide. The proposed regulations provide clarifications regarding: (i) Standards for the lifecycle analysis (LCA) of emissions that were captured or displaced for purposes of section 45Q(f)(5)(B); and (ii) the agency with responsibility to review the LCA.

The Treasury Department and the IRS have determined that the LCA must be in writing and either performed or verified by a professionally-licensed third party that uses generally-accepted standard practices of quantifying the greenhouse gas emissions of a product or process and comparing that impact to a baseline. In particular, the analysis must contain documentation consistent with the International Organization for Standardization (ISO) 14040:2006, “Environmental management—Life cycle assessment—Principles and framework and ISO 14044:2006, “Environmental management—Life cycle assessment—Requirements and guidelines,” as well as a statement documenting the qualifications of the third party.

The final regulations require a taxpayer submit an LCA report to the IRS and the DOE prior to the taxpayer claiming the section 45Q credit. The LCA report will be subject to a technical review by the DOE, and the IRS will determine whether to approve the LCA.

The final regulations provide greater clarity for calculating qualified carbon oxide utilization. This enhanced clarity should increase transparency and lower

compliance burden. In addition, the final regulations allow for oversight of the LCA plans by a third party, the DOE, and the IRS (in consultation with the DOE and the EPA); evaluation and approval of the plans before the taxpayer claims the credit will potentially reduce taxpayer compliance costs and IRS administrative costs. Following industry-specific standards will also increase clarity in qualifying for the section 45Q credit.

The final regulations provide an economic gain arising from enhanced clarity regarding the rules of the section 45Q credit within the context of the intent and purpose of the statute. The Treasury Department and the IRS project that this clarity will encourage additional investment in carbon oxide utilization projects relative to the no-action baseline. The Treasury Department and the IRS have not estimated this gain because no data or models are readily available to predict (i) the interpretations that taxpayers might have made in the absence of this guidance, and (ii) the effect of such guidance on the investment that taxpayers would make, relative to alternative regulatory approaches or the no-action baseline.

II. Paperwork Reduction Act

The collection of information in these final regulations for section 45Q are in §§ 1.45Q–1(e), 1.45Q–1(h)(3)(iv), 1.45Q–1(h)(2)(v), 1.45Q–2(h)(2), 1.45Q–3(d), and 1.45Q–4(c)(1).

The collection of information in § 1.45Q–1(e) is an election to have the dollar amounts applicable under § 1.45Q–1(b) apply in lieu of the dollar amounts applicable under § 1.45Q–1(d) for each metric ton of qualified carbon oxide that a taxpayer captures using carbon capture equipment which is originally placed in service at a qualified facility on or after February 9, 2018. A new section 45Q(f)(3)(B) election must be made for each taxable year that the taxpayer wishes to allow a credit claimant to claim section 45Q credits. The election must be made on a Form 8933, *Carbon Oxide Sequestration Credit*, and applies to all metric tons of qualified carbon oxide captured by the taxpayer at the qualified facility throughout the full 12-year credit period. The IRS is contemplating making additional changes to the Form 8933 to take these final regulations into account.

The collection of information in § 1.45Q–1(h)(3)(iv) is an election that a taxpayer (electing taxpayer) eligible for the section 45Q credit may make to allow the person that disposes of the qualified carbon oxide, utilizes the

qualified carbon oxide, or uses the qualified carbon oxide as a tertiary injectant to claim the credit (credit claimant). The electing taxpayer that makes the section 45Q(f)(3)(B) election must file a statement of election containing the information described in § 1.45Q–1(h)(3)(iv) with the electing taxpayer’s Federal income tax return or Form 1065 for each taxable year in which the credit arises. The section 45Q(f)(3)(B) election must be made in accordance with Form 8933 no later than the time prescribed by law (including extensions) for filing the Federal income tax return for the year in which the credit arises. The election may not be filed with an amended Federal income tax return, an amended Form 1065, or an AAR, as applicable, after the prescribed date (including extensions) for filing the original Federal income tax return or Form 1065 for the year, with the exception of amended Federal income tax returns, amended Forms 1065, or AARs, as applicable, for any taxable year ending after December 31, 2017, and before taxable years beginning after the date of issuance of this final regulation. New section 45Q(f)(3)(B) elections must be made for each taxable year that the electing taxpayer wishes to allow credit claimants to claim section 45Q credits. The IRS is contemplating making additional changes to the Form 8933 to take these final regulations into account.

The collection of information in § 1.45Q–1(h)(2)(v) requires that if a taxpayer enters into a binding written contract with a third-party that physically carries out the disposal, injection, or utilization of qualified carbon oxide, the existence of each contract and the parties involved must be reported to the IRS annually on a Form 8933 by each party to the contract, regardless of the party claiming the credit. The IRS is contemplating making additional changes to the Form 8933 to take these final regulations into account.

The collection of information in § 1.45Q–2(h)(2) requires that a taxpayer that claims a section 45Q credit for qualified carbon oxide that is captured and then used as a tertiary injectant in a qualified enhanced oil or natural gas recovery project certify such qualified enhanced oil or natural gas recovery project as required under § 1.43–3. This requires that the taxpayer obtain a petroleum engineer’s certification under § 1.43–3(a)(3) for each project that must be attached to a Form 8933 and filed not later than the last date prescribed by law (including extensions) for filing the operator’s or designated owner’s Federal income tax return or Form 1065 for the first taxable year in which qualified

carbon oxide is injected into the reservoir. If a section 45Q credit is claimed on an amended Federal income tax return, an amended Form 1065, or an AAR, as applicable, the petroleum engineer's certification will be treated as filed timely if it is attached to a Form 8933 that is submitted with such amended federal income tax return, amended Form 1065, or AAR. With respect to a section 45Q credit that is claimed on a timely filed Federal income tax return or Form 1065 for a taxable year ending after February 9, 2018, and beginning before the date of issuance of this final regulation, for which the petroleum engineer's certification was not submitted, the petroleum engineer's certification will be treated as filed timely if it is attached to an amended Form 8933 for any taxable year ending after December 31, 2017, but not for taxable years beginning after June 2, 2020. Additionally, the taxpayer is required to provide an operator's continued certification under § 1.43-3(b)(3) for each project that must be attached to a Form 8933 and filed not later than the last date prescribed by law (including extensions) for filing the operator's or designated owner's Federal income tax return or Form 1065 for taxable years after the taxable year for which the petroleum engineer's certification is filed but not after the taxable year in which injection activity ceases and all injection wells are plugged and abandoned. The IRS is contemplating making additional changes to the Form 8933 to take these final regulations into account.

The collection of information in § 1.45Q-3(d) requires a taxpayer that claims a section 45Q credit for qualified carbon oxide that is captured and then used as a tertiary injectant in a qualified enhanced oil or natural gas recovery project to certify the volume of carbon oxide claimed for purposes of section 45Q. A taxpayer that reported volumes of carbon oxide to the EPA pursuant to subpart RR may self-certify the volume of carbon oxide claimed for purposes of section 45Q. Alternatively, if the taxpayer determined volumes pursuant to CSA/ANSI ISO 27916:2019, a taxpayer may prepare documentation as outlined in CSA/ANSI ISO 27916:2019

internally, but such documentation must be provided to a qualified independent engineer or geologist, who then must certify that the documentation provided, including the mass balance calculations as well as information regarding monitoring and containment assurance is accurate and complete. Taxpayers that capture carbon oxide giving rise to the section 45Q credit must file Form 8933 with a timely filed tax return, including extensions. Taxpayers that dispose of, inject, or utilize qualified carbon oxide must also file Form 8933 with a timely filed Federal income tax return or Form 1065, including extensions. The IRS is contemplating making additional changes to the Form 8933 to take these regulations into account.

The collection of information in § 1.45Q-4(c)(1) requires a taxpayer that utilizes qualified carbon oxide to measure the amount of carbon oxide captured and utilized through a combination of direct measurement and life cycle analysis (LCA). The measurement and written LCA report must be performed by or verified by an independent third-party. The report must contain documentation consistent with the International Organization for Standardization (ISO) 14040:2006, "Environmental management—Life cycle assessment—Principles and framework" and ISO 14044:2006, "Environmental management—Life cycle assessment—Requirements and guidelines," as well as a statement documenting the qualifications of the third-party, including proof of appropriate professional license or foreign equivalent, and an affidavit from the third party stating that it is independent from the taxpayer. The taxpayer must submit the written LCA report to the IRS and the DOE. The LCA report will be subject to a technical review by the DOE, and the IRS will determine whether to approve the LCA.

For purposes of the Paperwork Reduction Act of 1995 (51087 U.S.C. 3507(d)) (PRA), the reporting burden associated with proposed §§ 1.45Q-1(e), 1.45Q-1(h)(3)(iv), 1.45Q-1(h)(2)(v), 1.45Q-2(h)(2), 1.45Q-3(d), and 1.45Q-4(c)(1) will be reflected in the IRS Paperwork Reduction Act Submission

for the Form 8933 (OMB control numbers 1545-0123 and 1545-2132). The IRS is anticipating making revisions to Form 8933 to take these final regulations into account. When available, drafts of IRS forms are posted for comment at www.irs.gov/draftforms.

The current status of the Paperwork Reduction Act submissions related to the section 45Q credit and the tax forms that will be revised as a result of the information collections in the section 45Q regulations is provided in the following table. The section 45Q provisions are included in aggregated burden estimates for the OMB control numbers listed later which, in the case of 1545-0123, represents a total estimated burden time, including all other related forms and schedules for corporations, of 3.344 billion hours and total estimated monetized costs of \$61.558 billion (\$2019). The burden estimates provided in the OMB control numbers are aggregate amounts that relate to the entire package of forms associated with the OMB control number, and will in the future include but not isolate the estimated burden of only the section 45Q requirements. These numbers are therefore unrelated to the future calculations needed to assess the burden imposed by the final regulations. No burden estimates specific to the final regulations are currently available. The Treasury Department has not estimated the burden, including that of any new information collections, related to the requirements under the final regulations. Those estimates would capture both changes made to section 45Q by the BBA and those that arise out of discretionary authority exercised in the final regulations. The Treasury Department and the IRS request comments on all aspects of information collection burdens related to the final regulations, including estimates for how much time it would take to comply with the paperwork burdens described earlier for each relevant form and ways for the IRS to minimize the paperwork burden.

When available, drafts of IRS forms are posted for comment at www.irs.gov/draftforms. Forms will not be finalized until after they have been approved by OMB under the PRA.

Form	Type of filer	OMB No.(s)	Status
Form 8933	Business	1545-2132	Sixty-day notice published in the Federal Register on 10/21/19 (84 FR 56283). Public comment period closed on 12/20/19. Thirty-day notice published in the Federal Register on 1/31/20 (85 FR 5776). Public comment period closed on 3/2/20. OIRA approval is pending.

Form	Type of filer	OMB No.(s)	Status
Form 8933	Business (NEW Model).	1545-0123	Sixty-day notice published in the Federal Register on 9/30/19 (84 FR 51718). Public Comment period closed on 11/29/19. Thirty-day notice published in the Federal Register on 12/19/19 (84 FR 69825). Public Comment period closed on 1/21/20. Approved by OIRA on 1/30/20.
	Link: https://hs--www--federalregister--gov.tickly.io/documents/2019/10/21/2019-22844/proposed-collection-comment-request-for-form-8933		

III. Regulatory Flexibility Act

It is hereby certified that these final regulations will not have a significant economic impact on a substantial number of small entities within the meaning of section 601(6) of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) (RFA). Although a substantial number of small entities may be affected, the economic impact of this rule is unlikely to be significant.

The RFA imposes certain requirements with respect to Federal rules that are subject to the notice and comment requirements of section 553(b) of the Administrative Procedure Act (5 U.S.C. 551 *et seq.*) and that are likely to have a significant economic impact on a substantial number of small entities. Unless an agency determines that a proposal is not likely to have a significant economic impact on a substantial number of small entities, section 603 of the RFA requires the agency to present an initial regulatory flexibility analysis (IRFA) of the proposed rule. Therefore, the Treasury Department and the IRS presented an IRFA in connection with the proposed rule in order to invite comments on both the number of entities affected and the economic impact on small entities. No comments were received specific to these areas of inquiry. In the absence of comments, this final regulatory flexibility analysis (FRFA) is presented with the final rule.

In addition, pursuant to section 7805(f) of the Code, the proposed rule preceding this final rule was submitted to the Chief Counsel for the Office of Advocacy of the Small Business Administration for comment on its impact on small business, and no comments were received from the Chief Counsel for the Office of Advocacy of the Small Business Administration.

1. Need for and Objectives of the Rule

The final regulations will provide greater clarity to taxpayers for purposes of claiming the section 45Q credit for the capture and disposal, injection, or utilization of qualified carbon oxide. The final rule is expected to encourage taxpayers to invest in carbon capture technologies. Thus, the Treasury Department and the IRS intend and

expect that the final rule will deliver benefits across the economy that will beneficially impact various industries and reduce emissions of carbon oxides that would otherwise be released into the atmosphere as industrial emission of greenhouse gasses or lead to such release.

2. Affected Small Entities

The Small Business Administration estimates in its 2018 Small Business Profile that 99.9 percent of United States businesses meet its definition of a small business. The applicability of these proposed regulations does not depend on the size of the business, as defined by the Small Business Administration. As described more fully in the preamble to this final regulation and in this FRFA, these rules may affect a variety of different businesses across several different industries.

The section 45Q credit incentivizes three different categories of activities related to captured carbon oxide. First, the section 45Q credit is available to taxpayers who capture carbon oxide and dispose of it in secure geological storage. This would occur if it were injected into a geological formation, such as a deep saline formation, an oil and gas reservoir, or an unminable coal seam. The taxpayer claiming the credit for carbon oxide that is securely stored can be either the taxpayer who owns the capture equipment, or if an election is made, the taxpayer who disposes of the carbon oxide.

Second, the section 45Q credit is also available for carbon oxide captured and used as a tertiary injectant in a qualified enhanced oil or natural gas recovery project and disposed of in secure geological storage. The taxpayer claiming the credit for carbon oxide that is used as a tertiary injectant in enhanced oil recovery projects can be either the taxpayer who owns the capture equipment, or if an election is made, the taxpayer who uses the carbon oxide as a tertiary injectant in a qualified enhanced oil or natural gas recovery project.

And third, the section 45Q credit is available for carbon oxide “utilized” by fixing it through photosynthesis or chemosynthesis, converted to a material

or chemical compound in which it is securely stored, or used for any other purpose for which a commercial market exists. The taxpayer claiming the credit for utilization of carbon oxide can be either the taxpayer who owns the carbon capture equipment, or if an election is made, the taxpayer who utilizes the carbon oxide.

Because the potential credit claimants in all three of these scenarios can vary, including potential tax equity investors from the financial services sector as credit claimants, it is difficult to estimate at this time the impact of the final rule, if any, on small businesses.

The Treasury Department and the IRS expect to receive more information on the impact on small businesses when taxpayers start to claim the section 45Q credit using the guidance and procedures provided in these final regulations.

3. Issues Raised by Commenters

As previously noted, no comments were received specifically related to the impact of the proposed rule on small entities or on the number of potentially impacted entities. The preamble to this final rule describes in detail the various technical issues raised by commenters in response to the proposed rule and further describes the ways in which the final rule is responsive to comments.

4. Reporting, Recordkeeping, and Other Compliance Requirements

The final regulations will allow taxpayers to plan investments and transactions based on the ability to claim the section 45Q credit. The increased use of the section 45Q credit may lead to increased investment in infrastructure to transport carbon dioxide, and increased development of carbon capture technologies. In addition, the increased use of the section 45Q credit will incentivize the development of technologies for utilization of carbon oxide. The recordkeeping and reporting requirements will increase for taxpayers that claim the section 45Q credit. This includes costs associated with the taxpayer filing the Form 8933, as well as required election statements and maintaining records to substantiate

carbon capture of carbon oxide, disposal in secure geological storage, use as a tertiary injectant in a qualified enhanced oil or natural gas recovery project and disposal in secure geological storage, or utilization. Each taxpayer will be required to file a separate Form 8933 for each year that a section 45Q credit is claimed or that an election is made with respect to a section 45Q credit. Although the Treasury Department and the IRS do not have sufficient data to determine precisely the likely extent of the increased costs of compliance, the estimated burden of complying with the recordkeeping and reporting requirements are described in the Paperwork Reduction Act section of the preamble.

5. Alternatives Considered

As described in more detail in the Regulatory Impact Analysis of this preamble, the Treasury Department and the IRS considered alternatives to the final regulations. For example, in providing rules related to recapture of section 45Q credits the Treasury Department and the IRS considered, as suggested by commenters, whether a shorter recapture period was more appropriate given the available evidence regarding the secure storage of carbon oxide. In addition, in providing rules related to how to demonstrate secure geological storage in the case of tertiary injection and disposal through secure geological storage, the Treasury Department and the IRS considered whether to (i) require compliance with subpart RR, (ii) allow use of subpart RR or CSA/ANSI ISO 27916:19, or (iii) other alternatives to subpart RR including use of state programs. Commenters consistently recommended CSA/ANSI ISO 27916:19 as a potential alternative to subpart RR. The Treasury Department and the IRS, in consultation with the DOE, the EPA and the Interior Department, agreed that, in the case of tertiary injection and disposal through secure geological storage, allowing the use of subpart RR or CSA/ANSI ISO 27916:19 would sufficiently demonstrate secure geological storage for purposes of the statutory requirement, without creating or imposing undue burdens on taxpayers.

IV. Unfunded Mandates Reform Act

Section 202 of the Unfunded Mandates Reform Act of 1995 requires that agencies assess anticipated costs and benefits and take certain other actions before issuing a final rule that includes any Federal mandate that may result in expenditures in any one year by a state, local, or tribal government, in the aggregate, or by the private sector, of

\$100 million in 1995 dollars, updated annually for inflation. In 2019, that threshold is approximately \$154 million. These final regulations do not include any Federal mandate that may result in expenditures by state, local, or tribal governments, or by the private sector in excess of that threshold.

V. Executive Order 13132: Federalism

Executive Order 13132 (entitled Federalism) prohibits an agency (to the extent practicable and permitted by law) from promulgating any regulation that has federalism implications, unless the agency meets the consultation and funding requirements of section 6 of the Executive Order, if the rule either imposes substantial, direct compliance costs on state and local governments, and is not required by statute, or preempts state law. These final regulations do not have federalism implications and does not impose substantial direct compliance costs on state and local governments or preempt state law within the meaning of the Executive Order.

VI. Congressional Review Act

The Administrator of OIRA has determined that this is a major rule for purposes of the Congressional Review Act (5 U.S.C. 801 *et seq.*) (CRA). Under section 801(3) of the CRA, a major rule takes effect 60 days after the rule is published in the **Federal Register**.

Notwithstanding this requirement, section 808(2) of the CRA allows agencies to dispense with the requirements of section 801 when the agency for good cause finds that such procedure would be impracticable, unnecessary, or contrary to the public interest and the rule shall take effect at such time as the agency promulgating the rule determines. Pursuant to section 808(2) of the CRA, the Treasury Department and the IRS find, for good cause, that a 60-day delay in the effective date is unnecessary and contrary to the public interest.

Following the amendments to section 45Q under the BBA, the Treasury Department and the IRS published the proposed regulations to provide certainty to taxpayers. In particular, as demonstrated by the wide variety of public comments in response to the proposed regulations, taxpayers and other stakeholders continue to express concerns about the uncertainty regarding the proper application of the statutory rules under section 45Q. This uncertainty extends to the application of a number of important provisions in section 45Q requiring determinations to be made by the Secretary, in consultation with the Administrator of

the EPA, the Secretary of Energy, and the Secretary of the Interior, intended to provide certainty for taxpayers embarking on highly capital intensive projects intended to qualify for section 45Q credits. Certainty with respect to these provisions is essential so that taxpayers can accurately predict the economic return from making particular investments and make informed business decisions. Consistent with Executive Order 13924 (May 19, 2020) and bipartisan letters from numerous Members of Congress urging expeditious publication of these final regulations, the Treasury Department and the IRS have therefore determined that an expedited effective date of the final regulations would provide needed guidance on what the law requires for businesses to begin job-generating construction of capital intensive projects qualifying for section 45Q credits during a time of economic uncertainty and distress. See 85 FR 31353–4. Accordingly, the Treasury Department and the IRS have determined that the rules in this Treasury decision will take effect on the date of filing for public inspection in the **Federal Register**.

Statement of Availability for IRS Documents

The IRS Revenue Procedures, Revenue Rulings, Notices, and other guidance cited in this document are published in the Internal Revenue Bulletin (or Cumulative Bulletin) and are available from the Superintendent of Documents, U.S. Government Publishing Office, Washington, DC 20402, or by visiting the IRS website at <http://www.irs.gov>.

Drafting Information

The principal authors of these final regulations are Maggie Stehn and Jennifer Bernardini of the Office of Associate Chief Counsel (Passthroughs & Special Industries) and Julie Holmes Chapel of the Office of Associate Chief Counsel (Large Business & International). However, other personnel from the Treasury Department and the IRS participated in their development.

List of Subjects in 26 CFR Part 1

Income taxes, Reporting and recordkeeping requirements.

Proposed Amendments to the Regulations

Accordingly, 26 CFR part 1 is proposed to be amended as follows:

PART 1—INCOME TAXES

■ **Paragraph 1.** The authority citation for part 1 is amended by adding entries in numerical order to read in part as follows:

Authority: 26 U.S.C. 7805 * * *

* * * * *

Sections 1.45Q-1, 1.45Q-2, 1.45Q-3, 1.45Q-4, and 1.45Q-5 also issued under 26 U.S.C. 45Q(h).

Section 1.45Q-3 also issued under 26 U.S.C. 45Q(f)(2).

Section 1.45Q-4 also issued under 26 U.S.C. 45Q(f)(5).

Section 1.45Q-5 also issued under 26 U.S.C. 45Q(f)(4).

* * * * *

Par. 2. Sections 1.45Q-0, 1.45Q-1, 1.45Q-2, 1.45Q-3, 1.45Q-4, and 1.45Q-5 are added to read as follows:

§ 1.45Q-0 Table of Contents

This section lists the captions contained in §§ 1.45Q-1 through 1.45Q-5.

§ 1.45Q-1 Credit for Carbon Oxide Sequestration.

- (a) In general.
- (b) Credit amount for carbon capture equipment originally placed in service before February 9, 2018.
 - (1) In general.
 - (2) Inflation adjustment.
- (c) Credit amount for carbon capture equipment originally placed in service on or after February 9, 2018.
 - (d) Applicable dollar amount.
 - (1) Applicable dollar amount for any taxable year beginning in a calendar year after 2016 and before 2027 for qualified carbon oxide not used as a tertiary injectant or utilized.
 - (2) Applicable dollar amount for any taxable year beginning in a calendar year after 2026 for qualified carbon oxide not used as a tertiary injectant or utilized.
 - (3) Applicable dollar amount for any taxable year beginning in a calendar year after 2016 and before 2027 for qualified carbon oxide used as a tertiary injectant or utilized.
 - (4) Applicable dollar amount for any taxable year beginning in a calendar year after 2026 for qualified carbon oxide used as a tertiary injectant or utilized.
- (e) Election to apply the \$10 and \$20 credit amounts in lieu of the applicable dollar amounts.
- (f) Application of section 45Q for certain carbon capture equipment placed in service before February 9, 2018.
- (g) Installation of additional carbon capture equipment.
 - (1) Allocation of section 45Q credits for facilities installing additional carbon capture equipment.
 - (2) Additional carbon capture equipment.
 - (3) New carbon capture equipment.
 - (4) Examples.
 - (i) Example 1.
 - (ii) Example 2.
 - (iii) Example 3.

- (h) Eligibility for the section 45Q credit.
 - (1) Person to whom the section 45Q credit is attributable.
 - (i) Equipment placed in service before February 9, 2018.
 - (ii) Equipment placed in service on or after February 9, 2018.
 - (iii) Reporting.
 - (2) Contractually ensuring capture and disposal, injection, or utilization of qualified carbon oxide.
 - (i) Binding written contract.
 - (ii) Multiple binding written contracts permitted.
 - (iii) Contract provisions.
 - (iv) Pre-existing contracts.
 - (v) Reporting of contract information.
 - (vi) Relationship with election to allow section 45Q credit.
 - (3) Election to allow the section 45Q credit to another taxpayer.
 - (i) Example.
 - (ii) Time and manner of making election.
 - (iii) Annual election.
 - (iv) Required information.
 - (v) Requirements for section 45Q credit claimant.
 - (vi) Failure to satisfy reporting requirements.
 - (j) Applicability date.
- § 1.45Q-2 Definitions for Purposes of §§ 1.45Q-1 through 1.45Q-5.**
 - (a) Qualified carbon oxide.
 - (b) Recycled carbon oxide.
 - (c) Carbon capture equipment.
 - (1) Use of carbon capture equipment.
 - (2) Carbon capture equipment components.
 - (3) Single process train.
 - (d) Industrial facility.
 - (1) Exclusion.
 - (2) Industrial source.
 - (3) Manufacturing process.
 - (4) Examples.
 - (i) Example 1.
 - (ii) Example 2.
 - (e) Electricity generating facility.
 - (f) Direct air capture facility.
 - (g) Qualified facility.
 - (1) Emissions and capture requirements.
 - (2) Examples.
 - (i) Example 1.
 - (ii) Example 2.
 - (iii) Example 3.
 - (iv) Example 4.
 - (v) Example 5.
 - (3) Annualization of first-year and last-year qualified carbon oxide emission and/or capture amounts.
 - (i) In general.
 - (ii) Calculation.
 - (iii) Consequences.
 - (4) Election for applicable facilities.
 - (i) Applicable facility.
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 - (iii) Retroactive credit revocations.
 - (5) Retrofitted qualified facility or carbon capture equipment (80/20 Rule).
 - (h) Qualified enhanced oil or natural gas recovery project.
 - (1) Application of §§ 1.43-2 and 1.43-3.
 - (2) Required certification.
 - (3) Natural gas.
 - (4) Timely filing of petroleum engineer's certification.
 - (5) Carbon oxide injected in oil reservoir.
 - (6) Tertiary injectant.

- (i) Section 45Q credit.
 - (j) *Form 8933*.
 - (k) Applicability date.
- § 1.45Q-3 Secure Geological Storage.**
- (a) In general.
 - (b) Requirements for secure geological storage.
 - (c) Documentation.
 - (d) Certification.
 - (e) Failure to submit complete documentation or certification.
 - (f) Applicability date.
- § 1.45Q-4 Utilization of Qualified Carbon Oxide.**
- (a) In general.
 - (b) Amount utilized.
 - (1) In general.
 - (2) Limitation.
 - (c) Lifecycle greenhouse gas emissions and lifecycle analysis (LCA).
 - (1) In general.
 - (2) LCA verification.
 - (3) Standards of adequate lifecycle analysis.
 - (4) Third-party independent review of LCA.
 - (5) Submission of the LCA.
 - (6) LCA review.
 - (d) Commercial market.
 - (e) Applicability date.
- § 1.45Q-5 Recapture of Credit.**
- (a) Recapture event.
 - (b) Ceases to be disposed of in secure geological storage or used as a tertiary injectant.
 - (c) Leaked amount of qualified carbon oxide.
 - (d) Qualified carbon oxide subject to recapture.
 - (e) Recapture amount.
 - (f) Recapture period.
 - (g) Application of recapture.
 - (1) In general.
 - (2) Calculation.
 - (3) Multiple units.
 - (4) Multiple taxpayers.
 - (i) In general.
 - (ii) Partnerships.
 - (A) General rule.
 - (B) Terminated partnerships.
 - (5) Reporting.
 - (6) Examples.
 - (i) Example 1.
 - (ii) Example 2.
 - (iii) Example 3.
 - (iv) Example 4.
 - (v) Example 5.
 - (vi) Example 6.
 - (h) Recapture in the event of deliberate removal from storage.
 - (1) In general.
 - (2) Recycled qualified carbon oxide.
 - (i) Limited exceptions.
 - (j) Applicability date.

§ 1.45Q-1 Credit for Carbon Oxide Sequestration.

(a) *In general.* For purposes of section 38 of the Internal Revenue Code (Code), the carbon oxide sequestration credit is determined under section 45Q of the Code and this section (section 45Q credit). Generally, the amount of the section 45Q credit and the party that is

eligible to claim the credit depend on whether the taxpayer captures qualified carbon oxide using carbon capture equipment originally placed in service at a qualified facility before February 9, 2018, or on or after February 9, 2018, and whether the taxpayer disposes of the qualified carbon oxide in secure geological storage without using it as a tertiary injectant in a qualified enhanced oil or natural gas recovery project (disposal), uses it as a tertiary injectant in a qualified enhanced oil or natural gas recovery project and disposes of it in secure geological storage (injection), or utilizes it in a manner described in section 45Q(f)(5) and § 1.45Q-4 (utilization). The section 45Q credit applies only with respect to qualified carbon oxide the capture and disposal, injection, or utilization of which is within the United States (within the meaning of section 638(1) of the Code) or a possession of the United States (within the meaning of section 638(2)).

(b) *Credit amount for carbon capture equipment originally placed in service before February 9, 2018—(1) In general.* For carbon capture equipment originally placed in service at a qualified facility before February 9, 2018, the amount of credit determined under section 45Q(a) and this section is the sum of—

(i) \$20 per metric ton of qualified carbon oxide that is—
(A) Captured by the taxpayer at the qualified facility and disposed of by the taxpayer in secure geological storage, and

(B) Not used by the taxpayer as a tertiary injectant in a qualified enhanced oil or natural gas recovery project or utilized by the taxpayer in a manner described in section 45Q(f)(5) and § 1.45Q-4, and

(ii) \$10 per metric ton of qualified carbon oxide that is—

(A) Captured by the taxpayer at the qualified facility and used by the taxpayer as a tertiary injectant in a qualified enhanced oil or natural gas recovery project, and disposed of by the taxpayer in secure geological storage, or

(B) Captured by the taxpayer at the qualified facility and utilized by the taxpayer in a manner described in section 45Q(f)(5) and § 1.45Q-4.

(2) *Inflation adjustment.* In the case of any taxable year beginning in a calendar year after 2009, there is substituted for each dollar amount contained in paragraphs (b)(1)(i) and (ii) of this section an amount equal to the product of—

(i) Such dollar amount, multiplied by
(ii) The inflation adjustment factor for such calendar year determined under section 43(b)(3)(B) for such calendar

year, determined by substituting “2008” for “1990.”

(c) *Credit amount for carbon capture equipment originally placed in service on or after February 9, 2018.* For carbon capture equipment originally placed in service at a qualified facility on or after February 9, 2018, the amount of credit determined under section 45Q(a)(3) and (4) and this section is the sum of—

(1) The applicable dollar amount (as determined under paragraph (d)(1) and (2) of this section) per metric ton of qualified carbon oxide that is captured during the 12-year period beginning on the date the equipment was originally placed in service, and is—

(i) Disposed of by the taxpayer in secure geological storage, and

(ii) Not used by the taxpayer as a tertiary injectant in a qualified enhanced oil or natural gas recovery project or utilized by the taxpayer in a manner described in section 45Q(f)(5) and § 1.45Q-4; and

(2) The applicable dollar amount (as determined under paragraph (d)(3) and (4) of this section) per metric ton of qualified carbon oxide that is captured during the 12-year period beginning on the date the equipment was originally placed in service and is—

(i) Used by the taxpayer as a tertiary injectant in a qualified enhanced oil or natural gas recovery project and disposed of by the taxpayer in secure geological storage, or

(ii) Utilized by the taxpayer in a manner described in section 45Q(f)(5) and § 1.45Q-4.

(d) *Applicable dollar amount.* In general, the applicable dollar amount depends on whether section 45Q(a)(3) and paragraph (c)(1) of this section applies or section 45Q(a)(4) and paragraph (c)(2) of this section applies, and the calendar year in which the taxable year begins.

(1) *Applicable dollar amount for any taxable year beginning in a calendar year after 2016 and before 2027 for qualified carbon oxide not used as a tertiary injectant or utilized.* For purposes of section 45Q(a)(3) and paragraph (c)(1) of this section, the applicable dollar amount for each taxable year beginning in a calendar year after 2016 and before 2027 is:

TABLE 1 TO PARAGRAPH (d)(1)

Year	Applicable dollar amount
2017	\$22.66
2018	25.70
2019	28.74
2020	31.77
2021	34.81

TABLE 1 TO PARAGRAPH (d)(1)—
Continued

Year	Applicable dollar amount
2022	37.85
2023	40.89
2024	43.92
2025	46.96
2026	50.00

(2) *Applicable dollar amount for any taxable year beginning in a calendar year after 2026 for qualified carbon oxide not used as a tertiary injectant or utilized.* For purposes of section 45Q(a)(3) and paragraph (c)(1) of this section, the applicable dollar amount for any taxable year beginning in any calendar year after 2026 is an amount equal to the product of \$50 and the inflation adjustment factor for the calendar year determined under section 43(b)(3)(B) for the calendar year, determined by substituting “2025” for “1990.”

(3) *Applicable dollar amount for any taxable year beginning in a calendar year after 2016 and before 2027 for qualified carbon oxide used as a tertiary injectant or utilized.* For purposes of section 45Q(a)(4) and paragraph (c)(2) of this section, the applicable dollar amount for each taxable year beginning in a calendar year after 2016 and before 2027 is:

TABLE 2 TO PARAGRAPH (d)(3)

Year	Applicable dollar amount
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

(4) *Applicable dollar amount for any taxable year beginning in a calendar year after 2026 for qualified carbon oxide used as a tertiary injectant or utilized.* For purposes of section 45Q(a)(4) and paragraph (c)(2) of this section, the applicable dollar amount for any taxable year beginning in any calendar year after 2026, is 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.”

(e) *Election to apply the \$10 and \$20 credit amounts in lieu of the applicable dollar amounts.* For purposes of determining the carbon oxide sequestration credit under this section, a taxpayer may elect to have the dollar amounts applicable under section 45Q(a)(1) or (2) and paragraph (b) of this section apply in lieu of the dollar amounts applicable under section 45Q(a)(3) or (4) and paragraph (d) of this section for each metric ton of qualified carbon oxide which is captured by the taxpayer using carbon capture equipment which is originally placed in service at a qualified facility on or after February 9, 2018. The election must be made on a *Form 8933* (as defined in § 1.45Q-2(j)), and applies to all metric tons of qualified carbon oxide captured by the taxpayer using carbon capture equipment which is originally placed in service at the qualified facility throughout the full 12-year credit period.

(f) *Application of section 45Q for certain carbon capture equipment placed in service before February 9, 2018.* In the case of any carbon capture equipment placed in service before February 9, 2018, the credits under section 45Q(a)(1) and (2) and paragraph (b)(1)(i) and (ii) of this section apply with respect to qualified carbon oxide captured using such equipment before the end of the calendar year in which the Secretary of the Treasury or his delegate, in consultation with the Administrator of the Environmental Protection Agency (EPA), certifies that, during the period beginning after October 3, 2008, a total of 75,000,000 metric tons of qualified carbon oxide have been taken into account in accordance with section 45Q(a), as in effect on February 8, 2018, and section 45Q(a)(1) and (2). In general, a taxpayer may not claim credits under section 45Q(a)(1) and (2) in taxable years after the year in which the 75,000,000 metric ton limit is certified with respect to carbon capture equipment placed in service before February 9, 2018. However, see § 1.45Q-2(g)(4) regarding the election for applicable facilities to treat certain carbon capture equipment as having been placed in service on February 9, 2018 (section 45Q(f)(6) election).

(g) *Installation of additional carbon capture equipment.* In general, the credit amounts for property placed in service before February 9, 2018, apply to a qualified facility at which carbon capture equipment was placed in service before February 9, 2018, subject to the limitations under paragraph (f) of this section. The same qualified facility may place additional carbon capture

equipment in service on or after February 9, 2018. The additional carbon capture equipment is eligible to qualify for the section 45Q credit amounts for equipment placed in service on or after February 9, 2018.

(1) *Allocation of section 45Q credits for facilities installing additional carbon capture equipment.* In the case of a qualified facility placed in service before February 9, 2018, for which additional carbon capture equipment is placed in service on or after February 9, 2018, the amount of qualified carbon oxide which is captured by the taxpayer is equal to—

(i) For purposes of section 45Q(a)(1)(A) and (2)(A), and paragraphs (b)(1)(i) and (ii) of this section, the lesser of the total amount of qualified carbon oxide captured at such facility for the taxable year, or the total amount of the carbon dioxide capture capacity of the carbon capture equipment in service at such facility on February 8, 2018, and

(ii) For purposes of section 45Q(a)(3)(A) and (4)(A), and paragraphs (c)(1) and (2) of this section, an amount (not less than zero) equal to the excess of the total amount of qualified carbon oxide captured at such facility for the taxable year, over the total amount of the carbon dioxide capture capacity of the carbon capture equipment in service at such facility on February 8, 2018.

(2) *Additional carbon capture equipment.* A physical modification or equipment addition that results in an increase in the carbon dioxide capture capacity of existing carbon capture equipment constitutes the installation of additional carbon capture equipment. Increasing the amount of carbon dioxide captured without physically modifying existing carbon capture equipment or adding new equipment, for example, by merely operating the existing carbon capture equipment above the carbon dioxide capture capacity, does not constitute the installation of additional carbon capture equipment. For purposes of this section, the term *carbon dioxide capture capacity* means capture design capacity. Section 45Q credits attributable to qualified carbon oxide captured by additional carbon capture equipment that is placed in service on or after February 9, 2018, are not subject to the 75,000,000 metric ton limitation described in section 45Q(g) and paragraph (f) of this section.

(3) *New carbon capture equipment.* A physical modification or equipment addition with a cost that satisfies the 80/20 Rule provided in § 1.45Q-2(g)(5) constitutes the installation of new carbon capture equipment rather than the installation of additional carbon capture equipment.

(4) *Examples.* The following examples illustrate the rules of this paragraph (g):

(i) *Example 1.* Taxpayer X owns qualified facility QF. In 2017, X placed in service three units of carbon capture equipment—CC1, CC2, and CC3—to capture carbon dioxide emitted by QF. Each of CC1, CC2, and CC3 are capable of capturing 50,000 metric tons of carbon dioxide. In 2017, X entered into a binding written contract with Y to provide 80,000 metric tons of carbon dioxide annually for Y to dispose of in secure geological storage. X operates CC1 and CC2 to capture carbon dioxide pursuant to the binding written contract with Y, leaving CC3 idle. In 2020, X enters into a binding written contract with Z to provide 40,000 metric tons of carbon dioxide annually for Z to dispose of in secure geological storage. X operates CC3 to capture carbon dioxide pursuant to the binding written contract with Z. CC3 is not additional carbon capture equipment under paragraph (g)(2) of this section simply because it began operating CC3 in 2020. X merely increased the amount of carbon dioxide captured by existing carbon capture equipment. As a result, any section 45Q credits attributable to the carbon dioxide captured by CC3 and disposed of by Z are calculated under section 45Q(a)(1) and paragraph (b)(1)(i) of this section, and are subject to the 75,000,000 metric ton limitation described in section 45Q(g) and paragraph (f) of this section.

(ii) *Example 2.* Assume the same facts as in Example 1, except that in 2019, X physically modified CC3 to enable CC3 to capture 100,000 metric tons of carbon dioxide. The physical modification to upgrade CC3 does not satisfy the 80/20 Rule in § 1.45Q-2(g)(5). In 2020 X enters into a binding written contract with Z to provide 80,000 metric tons of carbon dioxide annually for Z to dispose of in secure geological storage. X operates CC3 to capture carbon dioxide pursuant to the binding written contract with Z. Because the physical modification to upgrade CC3 does not satisfy the 80/20 Rule, the physical modification to upgrade CC3 is considered the installation of additional carbon capture equipment under paragraph (g)(2) of this section, rather than new carbon capture equipment under paragraph (g)(3) of this section. As a result, any section 45Q credits attributable to the first 50,000 metric tons of carbon dioxide captured by CC3 and disposed of by Z are calculated under section 45Q(a)(1) and paragraph (b)(1)(i) of this section, and are subject to the 75,000,000 metric ton limitation described in section 45Q(g) and paragraph (f) of this section. Any section 45Q credits attributable to

additional carbon dioxide captured by CC3 and disposed of by Z in excess of those first 50,000 metric tons are calculated under section 45Q(a)(4) and paragraph (c)(2) of this section, and are not subject to the 75,000,000 metric ton limitation described in section 45Q(g) and paragraph (f) of this section.

(iii) *Example 3.* Assume the same facts as in Example 2, except that the physical modification to CC3 satisfies the 80/20 Rule in § 1.45Q-2(g)(5). The physical modification to CC3 is considered the installation of new carbon capture equipment under paragraph (g)(3) of this section. As a result, any section 45Q credits attributable to carbon dioxide captured by CC3 and disposed of by Z are calculated under section 45Q(a)(4) and paragraph (c)(2) of this section, and are not subject to the 75,000,000 metric ton limitation described in section 45Q(g) and paragraph (f) of this section.

(h) *Eligibility for the section 45Q credit.* The following rules determine who may claim the section 45Q credit.

(1) *Person to whom the section 45Q credit is attributable.* In general, the person to whom the credit is attributable is the person who may claim the credit. Except as provided in paragraph (h)(3) of this section, the section 45Q credit is attributable to the following persons—

(i) *Equipment placed in service before February 9, 2018.* In the case of qualified carbon oxide captured using carbon capture equipment that is originally placed in service at a qualified facility before February 9, 2018, the section 45Q credit is attributable to the person that captures and physically or contractually ensures the disposal, injection, or utilization of such qualified carbon oxide.

(ii) *Equipment placed in service on or after February 9, 2018.* In the case of qualified carbon oxide captured using carbon capture equipment that is originally placed in service at a qualified facility on or after February 9, 2018, the section 45Q credit is attributable to the person that owns the carbon capture equipment and physically or contractually ensures the capture and disposal, injection, or utilization of such qualified carbon oxide. For each single process train of carbon capture equipment (as described in § 1.45Q-2(c)(3)), only one taxpayer will be considered the person to whom the credit is attributable under this paragraph (h)(1)(ii). That person will be the taxpayer who either physically ensures the capture and disposal, injection, or utilization of such qualified carbon oxide or contracts with others to

capture and dispose, inject, or utilize such qualified carbon oxide.

(iii) *Reporting.* The taxpayer described in this paragraph (h)(1) as eligible to claim the section 45Q credit must claim the credit on a *Form 8933*, “Carbon Dioxide Sequestration Credit,” with the taxpayer’s Federal income tax return or *Form 1065*, “U.S. Return of Partnership Income,” for each taxable year for which the taxpayer is eligible. The taxpayer must provide the name and location of the qualified facilities at which the qualified carbon oxide was captured. If the taxpayer is claiming the section 45Q credit on an amended Federal income tax return, an amended *Form 1065*, or an administrative adjustment request under section 6227 (AAR), as applicable, the taxpayer must state AMENDED RETURN FOR SECTION 45Q CREDIT at the top of the amended Federal income tax return, the amended *Form 1065*, or the AAR, as applicable. The amended Federal income tax return or the amended *Form 1065* must be filed, in any event, not later than the applicable period of limitations on filing an amended Federal income tax return or *Form 1065* is being filed. A BBA partnership may make a late election by filing an AAR on or before October 15, 2021, but in any event, not later than the period of limitations on filing an AAR under section 6227(c).

(2) *Contractually ensuring capture and disposal, injection, or utilization of qualified carbon oxide.* 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, a taxpayer is not required to physically carry out the capture and disposal, injection, or utilization of qualified carbon oxide to claim the section 45Q credit if the taxpayer contractually ensures in a binding written contract that the party that physically carries out the capture, disposal, injection, or utilization of the qualified carbon oxide does so in the manner required under section 45Q, this section and §§ 1.45Q-2, 1.45Q-3, 1.45Q-4, and 1.45Q-5. A taxpayer may enter into a binding written contract with a general contractor that hires subcontractors to physically carry out the capture, disposal, injection, or utilization of the qualified carbon oxide, but the contract must bind the subcontractors to the requirements of this paragraph (h)(2). 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, a taxpayer that contractually

ensures the capture of the qualified carbon oxide is not eligible for the section 45Q credit. However, the taxpayer is not required to physically carry out the disposal, injection, or utilization of qualified carbon oxide to claim the section 45Q credit if the taxpayer contractually ensures in a binding written contract that the party that physically carries out the disposal, injection, or utilization of the qualified carbon oxide does so in the manner required under section 45Q, this section, and §§ 1.45Q-2, 1.45Q-3, 1.45Q-4, and 1.45Q-5.

(i) *Binding written contract.* A written contract is binding only if it is enforceable under State law against both the taxpayer and the party that physically carries out the capture, disposal, injection, or utilization of the qualified carbon oxide, or a predecessor or successor of either, 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 § 1.168(k)-1(b)(4)(ii)(A)-(D).

(ii) *Multiple binding written contracts permitted.* A taxpayer may enter into multiple binding written contracts with multiple parties for the capture, disposal, injection, or utilization of qualified carbon oxide. A party that physically carries out the capture, disposal, injection, or utilization of qualified carbon oxide may enter into multiple binding written contracts with multiple parties that own carbon capture equipment or capture or contractually ensure the capture of qualified carbon oxide.

(iii) *Contract provisions.* Contracts ensuring the capture, disposal, injection, or utilization of qualified carbon oxide—

(A) Must include commercially reasonable terms and provide for enforcement of the party’s obligation to perform the capture, disposal, injection, or utilization of the qualified carbon oxide;

(B) May, but are not required to, include long-term liability provisions, indemnity provisions, penalties for breach of contract, or liquidated damages provisions;

(C) May, but are not required to, include information including how many metric tons of qualified carbon oxide the parties agree to dispose of, inject, or utilize;

(D) May, but are not required to, include minimum quantities that the parties agree to dispose of, inject, or utilize;

(E) Must, in the case of qualified carbon oxide that is intended to be disposed of in secure geological storage and not used as a tertiary injectant in a qualified enhanced oil or natural gas recovery project, obligate the disposing party to comply with §§ 1.45Q–3(b)(1) and (c), and, in the case of a recapture event, promptly inform the capturing party of all information that is pertinent to the recapture (e.g., location of leak, leaked amount of qualified carbon oxide, dollar value of section 45Q credit attributable to leaked qualified carbon oxide);

(F) Must, for qualified carbon oxide that is intended to be used as a tertiary injectant in a qualified enhanced oil or natural gas recovery, obligate the disposing party to comply with § 1.45Q–3(b)(2) and (c), and in the case of a recapture event, promptly inform the capturing party of all information that is pertinent to recapture of the section 45Q credit as listed in § 1.45Q–5; and

(G) Must, for qualified carbon oxide that is intended to be utilized in a manner specified in § 1.45Q–4, obligate the utilizing party to comply with § 1.45Q–4.

(iv) *Pre-existing contracts.* If a taxpayer entered into a contract for the capture, disposal, injection, or utilization of qualified carbon oxide prior to January 13, 2021, and that contract does not satisfy all of the requirements of this paragraph (h)(2), the taxpayer must amend its existing contract or execute a new contract that satisfies all of the requirements of this paragraph (h)(2) by July 12, 2021.

(v) *Reporting of contract information.* The existence of each contract and the parties involved must be reported to the IRS annually. Each party to a contract must complete a signed *Form 8933* (as defined in § 1.45–2(j)) and provide information required by the instructions to *Form 8933*. The party that contracts with the taxpayer claiming the credit must also provide that taxpayer with a signed *Form 8933* in accordance with the instructions to *Form 8933*. The taxpayer claiming the credit must attach and file all other signed *Forms 8933* received by each other party to the contract to its own signed *Form 8933*. Failure of the taxpayer claiming the credit to satisfy this reporting requirement in a taxable year will result in the inability of that taxpayer to claim the credit with respect to any qualified carbon oxide that is disposed of, injected, or utilized in that taxable year pursuant to that particular contract. In

addition to any information stated as required on *Form 8933*, the report must include the following information—

(A) The name and taxpayer identification number of the taxpayer to whom the credit is attributable;

(B) The name and taxpayer identification number of each party with whom the taxpayer has entered into a contract to ensure the disposal, injection, or utilization of qualified carbon oxide;

(C) The date each contract to ensure the disposal, injection, or utilization of qualified carbon oxide was entered into;

(D) The number of metric tons of qualified carbon oxide each contracting party disposes of, injects, or utilizes on behalf of the contracting taxpayer each taxable year for reporting to the IRS; and

(E) For contracts for the disposal of qualified carbon oxide in secure geological storage or the use of qualified carbon oxide as a tertiary injectant in enhanced oil or natural gas recovery, the name of the operator, the field, unit, and reservoir, location by county and state, and identification number assigned to the facility by the EPA's electronic Greenhouse Gas Reporting Tool (e-GGRT ID number) for submission of the facility's 40 CFR part 98 annual reports.

(vi) *Relationship with election to allow section 45Q credit.* A taxpayer does not elect to allow all or a portion of the credit to any of the contracting parties merely by contracting with that party to ensure the disposal, injection, or utilization of qualified carbon oxide. Any election to allow all or a portion of the credit to be claimed by another party must be made separately pursuant to paragraph (h)(3) of this section.

(3) *Election to allow the section 45Q credit to another taxpayer.* The taxpayer described in paragraph (h)(1) of this section as the person to whom the section 45Q credit is attributable (electing taxpayer) may elect to allow the person that enters into a contract with the electing taxpayer to dispose of the qualified carbon oxide (disposer), utilize the qualified carbon oxide (utilizer), or use the qualified carbon oxide as a tertiary injectant (injector) to claim the credit (credit claimant) (section 45Q(f)(3)(B) election). However, the electing taxpayer may not elect or otherwise allow the section 45Q credit to a contractor or subcontractor that physically captures carbon oxide on behalf of the taxpayer. For purposes of this paragraph (h)(3), the disposer or injector that is eligible to be a credit claimant is the party that obtains the permit to dispose of the qualified carbon oxide in secure geological storage. In the case of an injector that is itself a joint venture (not a federal tax partnership),

only those taxpayers that hold a working interest in the joint venture may be credit claimants. A credit claimant may not allow the section 45Q credit to a subcontractor that performs the disposal, utilization, or injection for the credit claimant. The electing taxpayer may not claim any section 45Q credits that are allowable to a credit claimant. An electing taxpayer may elect to allow a credit claimant to claim the full amount or a partial amount of section 45Q credits arising during the taxable year. An electing taxpayer may elect to allow a single credit claimant or multiple credit claimants to claim section 45Q credits in the same taxable year. If an electing taxpayer elects to allow multiple credit claimants to claim section 45Q credits, the maximum amount of section 45Q credits allowable to each credit claimant is proportional to the amount of qualified carbon oxide disposed of, utilized, or used as a tertiary injectant by the credit claimant. A credit claimant may receive allowances of section 45Q credits from multiple electing taxpayers in the same taxable year. In the case of an electing taxpayer with multiple qualified facilities, the electing taxpayer must make a separate election for each qualified facility.

(i) *Example.* Electing Taxpayer, E, captures 1,000,000 metric tons of qualified carbon oxide with carbon capture equipment that was placed in service in 2020. In 2021, E contracts with two companies, A and B, for the disposal of the qualified carbon oxide. E is eligible for a section 45Q credit at a rate of \$22.68 per metric ton, for a total section 45Q credit of \$22,680,000. E contractually ensures that A will dispose of 300,000 metric tons of qualified carbon oxide and that B will dispose of 700,000 metric tons of qualified carbon oxide. E may make a section 45Q(f)(3)(B) election to allow up to \$6,804,000 of section 45Q credit to A and up to \$15,876,000 of section 45Q credit to B, equal to the value of the number of metric tons each party has contracted to ensure disposal, multiplied by the credit value of the metric tons disposed of.

(ii) *Time and manner of making election.* The electing taxpayer makes a section 45Q(f)(3)(B) election by filing a statement of election containing the information described in paragraph (h)(3)(iv) of this section with the taxpayer's Federal income tax return or *Form 1065* for each taxable year in which the credit arises. The section 45Q(f)(3)(B) election must be made in accordance with *Form 8933* no later than the time prescribed by law (including extensions) for filing the

Federal income tax return or *Form 1065* for the year in which the credit arises. The election may not be filed with an amended Federal income tax return, an amended *Form 1065*, or an AAR, as applicable, after the prescribed date (including extensions) for filing the original Federal income tax return or *Form 1065* for the year, with the exception of amended Federal income tax returns, amended *Forms 1065*, or AARs, as applicable, for any taxable year ending after February 9, 2018, and beginning on or before January 13, 2021. The amended Federal income tax return or the amended *Form 1065* must be filed, in any event, not later than the applicable period of limitations on assessment for the taxable year for which the amended Federal income tax return or *Form 1065* is being filed. A BBA partnership may make a late election by filing an AAR on or before October 15, 2021, but in any event, not later than the period of limitations on filing an AAR under section 6227(c).

(iii) *Annual election.* A section 45Q(f)(3)(B) election is only effective for the taxable year for which it is made. A new section 45Q(f)(3)(B) election must be made for each taxable year for which an electing taxpayer wishes to allow section 45Q credits to a credit claimant.

(iv) *Required information.* For the section 45Q(f)(3)(B) election to be valid under paragraph (h)(3)(ii) of this section, the election statement of the electing taxpayer must be made on *Form 8933* and must indicate that an election is being made under section 45Q(f)(3)(B). The electing taxpayer must provide each credit claimant with a copy of the electing taxpayer's *Form 8933*. The electing taxpayer must, in addition to any information required on *Form 8933* set forth the following information—

(A) The electing taxpayer's name, address, taxpayer identification number, location, and e-GGRT ID number(s) (if available) of each qualified facility where qualified carbon oxide was captured;

(B) The full amount of credit attributable to the taxpayer prior to the election and the corresponding metric tons of qualified carbon oxide;

(C) The name, address, and taxpayer identification number of each credit claimant, and the name and location and e-GGRT ID number(s) (if available) of:

(i) Each secure geological storage site where the qualified carbon oxide is disposed of or injected, or

(ii) Each site where the qualified carbon oxide is utilized;

(D) The dollar amount of section 45Q credits the taxpayer is allowing each credit claimant to claim and the corresponding metric tons of qualified carbon oxide; and

(E) The dollar amount of section 45Q credits retained by the electing taxpayer and the corresponding metric tons of qualified carbon oxide.

(v) *Requirements for section 45Q credit claimant.* For a section 45Q(f)(3)(B) election to be valid, the section 45Q credit claimant must include the following information on *Form 8933*—

(A) The name, address, taxpayer identification number of the credit claimant;

(B) The name, address, and taxpayer identification number of each taxpayer making an election under section 45Q(f)(3)(B) to allow the credit to the credit claimant;

(C) The name and location and e-GGRT ID number(s) (if available) of each qualified facility where qualified carbon oxide was captured;

(D) The name and location and e-GGRT ID number(s) (if available) of:

(i) Each secure geological storage site where the qualified carbon oxide is disposed of or injected, or

(ii) Each site where the qualified carbon oxide is utilized.

(E) The full dollar amount of section 45Q credits attributable to each electing taxpayer prior to the election and the corresponding metric tons of qualified carbon oxide;

(F) The dollar amount of section 45Q credits that each electing taxpayer is allowing the credit claimant to claim and the corresponding metric tons of qualified carbon oxide; and

(G) A copy of the electing taxpayer's *Form 8933*. The credit claimant must include this *Form 8933* with its timely filed Federal income tax return or *Form 1065* (including extensions). The election may not be filed with an amended Federal income tax return, an amended *Form 1065*, or an AAR, as applicable, after the prescribed date (including extensions) for filing the original Federal income tax return or *Form 1065* for the year, with the exception of amended Federal income tax returns, amended *Forms 1065*, or AARs, as applicable, for any taxable year ending after February 9, 2018, and beginning on or before January 13, 2021. The amended Federal income tax return or the amended *Form 1065* must be filed, in any event, not later than the applicable period of limitations on filing an amended Federal income tax return or *Form 1065*. In the case of a BBA partnership, the BBA partnership may make a late election by filing an AAR on

or before October 15, 2021, but in any event, not later than the period of limitations on filing an AAR under section 6227(c).

(vi) *Failure to satisfy reporting requirements.* With respect to any section 45Q(f)(3)(B) election, the failure of an electing taxpayer or a credit claimant to satisfy the requirements in paragraph (h)(3)(iv) or (v) in a taxable year will result in the inability to claim the credit with respect to any qualified carbon oxide that is disposed of, injected, or utilized in that taxable year pursuant to that particular election.

(i) *Applicability date.* This section applies to taxable years beginning on or after January 13, 2021. Taxpayers may choose to apply this section for taxable years beginning on or after January 1, 2018, provided the taxpayer applies this section and §§ 1.45Q-2, 1.45Q-3, 1.45Q-4, and 1.45Q-5 in their entirety and in a consistent manner.

§ 1.45Q-2 Definitions for Purposes of §§ 1.45Q-1 through 1.45Q-5.

(a) *Qualified carbon oxide.* The term *qualified carbon oxide* means—

(1) Any carbon dioxide which—

(i) Is captured from an industrial source by carbon capture equipment which is originally placed in service before February 9, 2018,

(ii) Would otherwise be released into the atmosphere as industrial emission of greenhouse gas 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

(2) Any carbon dioxide or other carbon oxide which—

(i) Is captured from an industrial source by carbon capture equipment which is originally placed in service on or after February 9, 2018,

(ii) Would otherwise be released into the atmosphere as industrial emission of greenhouse gas 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

(3) In the case of a direct air capture facility, any carbon dioxide that is captured directly from the ambient air and is measured at the source of capture and verified at the point of disposal, injection, or utilization.

(b) *Recycled carbon oxide.* The term *qualified carbon oxide* includes the initial deposit of captured carbon oxide used as a tertiary injectant. *Qualified carbon oxide* does not include carbon oxide that is recaptured, recycled, and re-injected as part of the enhanced oil or natural gas recovery process.

(c) *Carbon capture equipment.* In general, *carbon capture equipment*

includes all components of property that are used to capture or process carbon oxide until the carbon oxide is transported for disposal, injection, or utilization. Except as described in paragraph (c)(2) of this section, carbon capture equipment generally does not include components of property used for transporting qualified carbon oxide for disposal, injection, or utilization. Carbon capture equipment that is originally placed in service at a qualified facility on or after February 9, 2018, may be owned by a taxpayer other than the taxpayer that owns the industrial facility at which the carbon capture equipment is placed in service.

(1) *Use of carbon capture equipment.* Carbon capture equipment is equipment used for the purpose of—

(i) Separating, purifying, drying, and/or capturing carbon oxide that would otherwise be released into the atmosphere from an industrial facility;

(ii) Removing carbon oxide from the atmosphere via direct air capture; or

(iii) Compressing or otherwise increasing the pressure of carbon oxide.

(2) *Carbon capture equipment components.* Carbon capture equipment generally includes components of property necessary to compress, treat, process, liquefy, pump or perform some other physical action to capture qualified carbon oxide. For purposes of this paragraph (c), carbon capture equipment includes a system of gathering and distribution lines that collect carbon oxide captured from a qualified facility or multiple qualified facilities that constitute a single project (as described in section 8.01 of Notice 2020-12, 2020-11 I.R.B. 495 (see § 601.601(d)(1) and (2)(ii) of this chapter)) for the purpose of transporting that carbon oxide away from the qualified facility or single project to a pipeline used to transport carbon oxide to or from one or more taxpayers and projects.

(3) *Single process train.* All components that make up an independently functioning process train capable of capturing, processing, and preparing carbon oxide for transport will be treated as a single unit of carbon capture equipment.

(d) *Industrial facility.* An industrial facility is a facility, including an electricity generating facility, that produces a carbon oxide stream from a fuel combustion source or fuel cell, a manufacturing process, or a fugitive carbon oxide emission source that, absent capture and disposal, injection, or utilization, would otherwise be released into the atmosphere as industrial emission of greenhouse gas or lead to such release.

(1) *Exclusion.* An industrial facility does not include a facility that produces carbon dioxide from carbon dioxide production wells at natural carbon dioxide-bearing formations or a naturally occurring subsurface spring. For purposes of section 45Q, a carbon dioxide production well at natural carbon dioxide-bearing formations or a naturally occurring subsurface spring means a well that contains 90 percent or greater carbon dioxide by volume (90 percent test).

(2) *Exception for wells at natural carbon dioxide-bearing formations or a naturally occurring subsurface spring that contain a product other than carbon dioxide.* A well meeting the 90 percent test will not be treated as a carbon dioxide production well at natural carbon dioxide-bearing formations or a naturally occurring subsurface spring if:

(i) The deposit contains a product, other than carbon oxide, that is commercially viable to extract and sell without taking into account the availability of a commercial market for the carbon oxide that is extracted or any section 45Q tax credit that might be available;

(ii) The taxpayer provides an attestation to paragraph (d)(2)(i) of this section from an independent registered engineer with experience in feasibility studies for extraction of gases from the subsurface;

(iii) A direct air capture facility (defined in section 45Q(e)(1)(A)) is not used to capture carbon oxide from the gas stream; and

(iv) Any carbon oxide extracted from the deposit is used as tertiary injectant in an enhanced oil or natural gas recovery project or as feedstock of a utilization project.

(2) *Industrial source.* An industrial source is an emission of carbon oxide from an industrial facility.

(3) *Manufacturing process.* A manufacturing process is a process involving the manufacture of one or more products, other than carbon oxide, that are intended to be sold at a profit, or are used for a commercial purpose (other than producing carbon oxide). All facts and circumstances with respect to the process and products are to be taken into account.

(4) *Examples.* The following examples illustrate the rules of paragraph (d) of this section:

(i) *Example 1.* A natural underground reservoir contains a gas that is comprised of 50 percent carbon dioxide and 50 percent methane by volume. The raw gas is not usable without the application of a separation process to create two gases that are primarily

carbon dioxide and methane. Taxpayer B constructs processing equipment that separates the raw gas into carbon oxide and methane. The carbon dioxide is sold to a third party for use in a qualified enhanced oil recovery project. Some of the methane is used as fuel to power the processing equipment. The remainder of the methane is injected into the reservoir. The injection will increase the ultimate recovery of carbon dioxide. The injected methane can be produced later from the reservoir. At the end of the taxable year Taxpayer B has not secured a contract to sell methane and does not have any plans to use the methane for a commercial purpose other than producing carbon oxide. Because carbon dioxide is the only product manufactured that is intended to be sold at a profit or used for a commercial purpose, the separation process applied to the gases is not a manufacturing process within the meaning of paragraph (d)(3) of this section. The carbon dioxide captured by the process is not qualified carbon oxide.

(ii) *Example 2.* (A) A natural underground reservoir contains a gas that is comprised of 95 percent carbon dioxide and 5 percent helium by volume. The raw gas is not usable without the application of a separation process to create two gases that are primarily carbon dioxide and helium. Taxpayer C determines that the extraction of helium is economically viable even if there were no commercial market for carbon dioxide or any section 45Q credit. An independent registered engineer attests to Taxpayer C's determination. Taxpayer C constructs processing equipment that separates the raw gas into carbon dioxide and helium. The helium is sold to various customers for use in commercial and industrial applications. The carbon dioxide is sold to a third party for use in a qualified enhanced oil recovery project. Any carbon dioxide which the third party cannot accept is returned to the reservoir or vented in accordance with applicable permits.

(B) Because the extraction of helium is economically viable even if there were no commercial market for carbon dioxide or any section 45Q credit, the reservoir will not be considered a natural carbon dioxide-bearing formation or a naturally occurring subsurface spring within the meaning of paragraph (d)(1) and the separation process applied to the gases is a manufacturing process within the meaning of paragraph (d)(3). Taxpayer C may claim the section 45Q credit with respect to the carbon dioxide sold to the third party and which the third party uses in a qualified enhanced oil

recovery project during the taxable year. Taxpayer C may not claim the section 45Q credit with respect to the carbon dioxide that is returned to the reservoir or vented.

(e) *Electricity generating facility.* An *electricity generating facility* is a facility described in section 45Q(d)(2)(A) or (B) of the Internal Revenue Code (Code) that is subject to depreciation under MACRS Asset Class 49.11 (Electric Utility Hydraulic Production Plant), 49.12 (Electric Utility Nuclear Production Plant), 49.13 (Electric Utility Steam Production Plant), or 49.15 (Electric Utility Combustion Turbine Production Plant).

(f) *Direct air capture facility.* A *direct air capture facility* means any facility that uses carbon capture equipment to capture carbon oxide directly from the ambient air. It does not include any facility that captures carbon dioxide (1) that is deliberately released from naturally occurring subsurface springs or (2) using natural photosynthesis.

(g) *Qualified facility.* A *qualified facility* means any industrial facility or direct air capture facility, the construction of which begins before January 1, 2026, and either at which construction of carbon capture equipment begins before that date, or the original planning and design for which includes installation of carbon capture equipment, and at which carbon capture equipment is placed in service that captures the requisite annual thresholds of carbon oxide described in paragraph (g)(1) of this section. See Notice 2020–12 (see § 601.601(d)(1) and (2)(ii) of this chapter), for guidance on the determination of when construction has begun on a qualified facility or on carbon capture equipment. For purposes of whether a facility satisfies the requisite annual carbon oxide capture thresholds described in paragraph (g)(1) of this section, a taxpayer may apply the rules of section 8.01 of Notice 2020–12 (see § 601.601(d)(1) and (2)(ii) of this chapter) to treat multiple facilities as a single facility.

(1) *Emissions and capture requirements.* The carbon capture equipment placed in service at the qualified facility must capture—

(i) In the case of a facility, other than a direct air capture facility, which emits not more than 500,000 metric tons of carbon oxide into the atmosphere during the taxable year, at least 25,000 metric tons of qualified carbon oxide during the taxable year which is utilized in a manner consistent with section 45Q(f)(5) and § 1.45Q–4 (section 45Q(d)(2)(A) facility);

(ii) In the case of an electricity generating facility which is not a section

45Q(d)(2)(A) facility (section 45Q(d)(2)(B) facility), not less than 500,000 metric tons of qualified carbon oxide during the taxable year; and

(iii) In the case of a direct air capture facility or other facility that is not a section 45Q(d)(2)(A) facility or a section 45Q(d)(2)(B) facility, at least 100,000 metric tons of qualified carbon oxide during the taxable year.

(2) *Examples.* The following examples illustrate the rules of paragraph (g) of this section:

(i) *Example 1.* During the taxable year, an ethanol plant emits 200,000 metric tons of carbon dioxide. Carbon capture equipment located at the facility captures 35,000 metric tons of carbon dioxide, all of which are utilized in a manner consistent with section 45Q(f)(5) and § 1.45Q–4. The ethanol plant is a qualified facility under section 45Q(d)(2)(C) and § 1.45Q–2(g)(1)(i) during the taxable year because it met the requirement to capture at least 25,000 metric tons of qualified carbon oxide during the taxable year which were utilized in a manner consistent with section 45Q(f)(5) and § 1.45Q–4.

(ii) *Example 2.* During the taxable year, an electricity generating facility emits 600,000 metric tons of carbon dioxide. Carbon capture equipment located at the facility captures a total of 450,000 metric tons of carbon dioxide. 50,000 metric tons of the captured carbon dioxide are utilized in a manner consistent with section 45Q(f)(5) and § 1.45Q–4, and 400,000 metric tons of the carbon dioxide are disposed of in secure geological storage. The electricity generating facility is not a qualified facility under section 45Q(d)(2)(B) during the taxable year because it did not capture at least 500,000 metric tons of qualified carbon oxide during the taxable year. Further, because the electricity generating facility emitted greater than 500,000 metric tons of carbon dioxide during the taxable year, but only captured 450,000 metric tons, it is not a qualified facility under section 45Q(d)(2)(A) and § 1.45Q–2(g)(1)(ii).

(iii) *Example 3.* During the taxable year, a cement manufacturing plant emits 110,000 metric tons of carbon dioxide. Carbon capture equipment located at the plant captures 100,000 metric tons of carbon dioxide. 10,000 metric tons of the amount captured are utilized in a manner consistent with section 45Q(f)(5) and § 1.45Q–4, and 90,000 metric tons of carbon dioxide, are disposed of in secure geological storage. The cement manufacturing plant is a qualified facility during the taxable year because the carbon capture equipment located at the plant met the

requirement under section 45Q(d)(2)(C) and § 1.45Q–2(g)(1)(i) to capture at least 100,000 metric tons of qualified carbon oxide during the taxable year.

(iv) *Example 4.* Taxpayer X owns and operates three natural gas processing facilities (A, B, and C) that separate carbon dioxide from natural gas. A, B, and C are all located within several miles of each other. X installed carbon capture equipment by A, B, and C. Carbon dioxide captured by A, B, and C is collected via a single system of gathering and distribution lines for delivery to a transportation pipeline. X contracts with third-party Z for the use of carbon dioxide captured by A, B, and C as a tertiary injectant pursuant to a single contract. During the taxable year, equipment at A captures 30,000 metric tons of carbon dioxide, equipment at B captures 40,000 metric tons of carbon dioxide, and equipment at C captures 50,000 tons of carbon dioxide. All other factors listed in the single project rule in section 8.01 of Notice 2020–12 support the conclusion that A, B and C are a single facility. X may treat A, B, and C as a single facility under the rules of section 8.01 of Notice 2020–12 for purposes of determining whether the requirement under section 45Q(d)(2)(C) and § 1.45Q–2(g)(1)(i), to capture at least 100,000 metric tons of qualified carbon oxide during the taxable year is satisfied. If X treats A, B, and C as a single facility, the minimum capture requirement will be satisfied for the taxable year.

(3) *Annualization of first-year and last-year qualified carbon oxide emission and/or capture amounts—(i) In general.* For both the taxable year in which carbon capture equipment is placed in service at a qualified facility and the taxable year in which the 12-year period described in sections 45Q(a)(3)(A) and (4)(A) and § 1.45Q–1(c)(1) and (2) ends, annualization of the amount of qualified carbon oxide emitted and captured (or captured directly from the ambient air in the case of a direct air capture facility) is permitted to determine if the threshold requirements under paragraph (g)(1) of this section are satisfied. Such annualization may result in a facility being deemed to satisfy the threshold requirements under paragraph (g)(1) of this section for the year and may permit a taxpayer to claim section 45Q credits even though the amount of qualified carbon oxide emitted or captured in the first year or last year of the 12-year period is less than the threshold requirements under paragraph (g)(1) of this section.

(ii) *Calculation.* Annualization is only available for the taxable year in which

the carbon capture equipment is placed in service at the qualified facility and the taxable year in which the 12-year period described in sections 45Q(a)(3)(A) and (4)(A) and § 1.45Q-1(c)(1) and (2) ends. Annualized amounts must be calculated by—

(A) Determining the amount of qualified carbon oxide emitted and captured (or captured directly from the ambient air in the case of a direct air capture facility) during the taxable year in which the carbon capture equipment was placed in service at the qualified facility or the taxable year in which the 12-year period described in sections 45Q(a)(3)(A) and (4)(A) and § 1.45Q-1(c)(1) and (2) ends,

(B) Dividing the amount of qualified carbon determined under paragraph (g)(3)(ii)(A) of this section by the number of days in the period either (I) beginning with the date on which the carbon capture equipment was placed in service at the qualified facility and ending with the last day of the taxable year containing that date, or (II) beginning with the first day of the taxable year in which the 12-year period described in sections 45Q(a)(3)(A) and (4)(A) and § 1.45Q-1(c)(1) and (2) ends and ending with the last day of that 12-year period; and

(C) Multiplying by 365.

(iii) *Consequences.* If the annualized amounts of qualified carbon oxide emitted and captured (or captured directly from the ambient air in the case of a direct air capture facility) as calculated under this formula meet the threshold requirements under paragraph (g)(1) of this section, the threshold requirements under paragraph (g)(1) of this section are deemed satisfied for the taxable year in which the carbon capture equipment was placed in service at the qualified facility or the taxable year in which the 12-year period described in sections 45Q(a)(3)(A) and (4)(A) and § 1.45Q-1(c)(1) and (2) ends. The taxpayer may be eligible for a section 45Q credit for that taxable year but must calculate the credit based on actual amounts of qualified carbon oxide captured and disposed of, injected, or utilized during the taxable year.

(4) *Election for applicable facilities.* In the case of an applicable facility, for any taxable year during which such facility captures not less than 500,000 metric tons of qualified carbon oxide, the taxpayer described in section 45Q(f)(3)(A)(ii) and § 1.45Q-1(h)(1)(ii) (that is, the person that owns the carbon capture equipment and physically or contractually ensures the capture and disposal, injection or utilization of such 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 (section 45Q(f)(6) election). For purposes of whether a facility satisfies the 500,000 metric ton qualified carbon oxide capture threshold, a taxpayer may apply the rules of section 8.01 of Notice 2020-12 to treat multiple facilities as a single facility.

(i) *Applicable facility.* An applicable facility means a qualified facility described in section 45Q(f)(6)(B) and § 1.45Q-2(g) that was placed in service before February 9, 2018, for which no taxpayer claimed a section 45Q credit for qualified carbon oxide captured at the facility for any taxable year ending before February 9, 2018.

(ii) *Time and manner of making election.* The taxpayer described § 1.45Q-1(h)(1) makes a section 45Q(f)(6) election by filing a statement of election with the taxpayer's income tax return for each taxable year in which the credit arises. The section 45Q(f)(6) election must be made in accordance with *Form 8933* filed with the taxpayer's Federal income tax return for each taxable year in which the taxpayer makes the section 45Q(f)(6) election. The statement of election must, in addition to any information required on *Form 8933*, set forth the electing taxpayer's name, address, taxpayer identification number, location, and e-GGRT ID number(s) (if available) of the applicable facility.

(iii) *Retroactive credit revocations.* A taxpayer may not file an amended Federal income tax return, an amended *Form 1065*, or an AAR, as applicable, for any taxable year ending before February 9, 2018, to revoke a prior claim of section 45Q credits.

(5) *Retrofitted qualified facility or carbon capture equipment (80/20 Rule).* A qualified facility or carbon capture equipment may qualify as originally placed in service even if 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 or carbon capture equipment's total value (that is, the cost of the new components of property plus the value of the used components of property) (80/20 Rule). In determining the value of the used components of property as compared to the new components, the general principles of Revenue Ruling 94-31 (see § 601.601(d)(2)(i)(a) and (ii) of this chapter), will apply. The relevant unit of retrofitted carbon capture equipment for purposes of the 80/20 Rule is an independently functioning process train. For purposes of the 80/20

Rule, the cost of a new qualified facility or carbon capture equipment includes all properly capitalized costs of the new qualified facility or carbon capture equipment. Solely for purposes of the 80/20 Rule, properly capitalized costs of a new qualified facility or carbon capture equipment may, at the option of the taxpayer, include the cost of new equipment for a pipeline (the cost of equipment for a new pipeline, not equipment used to repair an existing pipeline) owned and used exclusively by that taxpayer to transport carbon oxides captured by that taxpayer's qualified facility or carbon capture equipment that would otherwise be emitted into the atmosphere.

(h) *Qualified enhanced oil or natural gas recovery project.* The term *qualified enhanced oil or natural gas recovery project* has the same meaning as a qualified enhanced oil recovery project under section 43(c)(2) of the Code and § 1.43-2, by substituting crude oil or natural gas for crude oil in section 43(c)(2)(A)(i) and §§ 1.43-2 and 1.43-3.

(1) *Application of §§ 1.43-2 and 1.43-3.* For purposes of applying §§ 1.43-2 and 1.43-3 with respect to a qualified enhanced oil or natural gas recovery project, the term enhanced oil or natural gas recovery is substituted for enhanced oil recovery, and the term oil or natural gas is substituted for oil.

(2) *Required certification.* The qualified enhanced oil or natural gas recovery project must be certified under § 1.43-3, even if no credit related to enhanced oil or natural gas recovery is claimed for the taxable year. For purposes of a natural gas project—

(i) The petroleum engineer's certification under § 1.43-3(a)(3) and the operator's continued certification of a project under § 1.43-3(b)(3) must include an additional statement that the certification is for purposes of the section 45Q carbon oxide sequestration tax credit;

(ii) The petroleum engineer's certification must be attached to a *Form 8933* and filed not later than the last date prescribed by law (including extensions) for filing the operator's or designated owner's Federal income tax return or *Form 1065* for the first taxable year in which qualified carbon oxide is injected into the reservoir; and

(iii) The operator's continued certification of a project must be attached to a *Form 8933* and filed not later than the last date prescribed by law (including extensions) for filing the operator's or designated owner's Federal income tax return or *Form 1065* for taxable years after the taxable year for which the petroleum engineer's certification is filed but not after the

taxable year in which injection activity ceases and all injection wells are plugged and abandoned.

(3) *Natural gas*. Natural gas has the same meaning as under section 613A(e)(2) of the Code.

(4) *Timely filing of petroleum engineer's certification*. For purposes of this paragraph (h), if a section 45Q credit is claimed on an amended Federal income tax return, an amended *Form 1065*, or an AAR, as applicable, the petroleum engineer's certification for a natural gas project will be treated as filed timely if it is attached to a *Form 8933* that is submitted with such amended Federal income tax return, amended *Form 1065*, or AAR. With respect to a section 45Q credit that is claimed on a timely filed Federal income tax return or *Form 1065* for a taxable year ending after December 31, 2017, and beginning on or before January 13, 2021, for which the petroleum engineer's certification for a natural gas project was not submitted, the petroleum engineer's certification for a natural gas project will be treated as filed timely if it is attached to an amended *Form 8933* for such taxable year.

(5) *Carbon oxide injected in oil reservoir*. Carbon oxide that is injected into an oil reservoir that is not a qualified enhanced oil recovery project under section 43(c)(2) due to circumstances such as the first injection of a tertiary injectant occurring before 1991, or because a petroleum engineer's certification was not timely filed, cannot be treated as qualified carbon oxide, disposed of in secure geological storage, or utilized in a manner described in section 45Q(f)(5). This rule will not apply to an oil reservoir if—

- (i) The reservoir has permanently ceased oil production;
- (ii) The operator has obtained an Underground Injection Control Class VI permit; and
- (iii) The operator complies with 40 CFR part 98 subpart RR.

(6) *Tertiary Injectant*. For purposes of section 45Q, a tertiary injectant is qualified carbon oxide that is injected into and stored in a qualified enhanced oil or natural gas recovery project and contributes to the extraction of crude oil or natural gas. The term *tertiary injectant* has the same meaning as used in section 193(b)(1) of the Code.

(i) *Section 45Q credit*. The term *section 45Q credit* means the carbon oxide sequestration credit determined under section 45Q of the Internal Revenue Code and § 1.45Q-1.

(j) *Form 8933*. The term *Form 8933* means Form 8933, Carbon Oxide Sequestration Credit, any successor

form(s), pursuant to instructions to any of the foregoing (see § 601.602 of this chapter), or other guidance. This definition of Form 8933 applies to this section and to §§ 1.45Q-1, 1.45Q-3, 1.45Q-4, and 1.45Q-5.

(k) *Applicability date*. This section applies to taxable years beginning on or after January 13, 2021. Taxpayers may choose to apply this section for taxable years beginning on or after January 1, 2018, provided the taxpayer applies this section and §§ 1.45Q-1, 1.45Q-3, 1.45Q-4, and 1.45Q-5 in their entirety and in a consistent manner.

§ 1.45Q-3 Secure Geological Storage.

(a) *In general*. To qualify for the section 45Q credit, a taxpayer must either physically or contractually dispose of captured qualified carbon oxide in secure geological storage in the manner provided in paragraph (b) of this section, or utilize qualified carbon oxide in a manner conforming with section 45Q(f)(5) of the Internal Revenue Code and § 1.45Q-4. Secure geological storage includes, but is not limited to, storage at deep saline formations, oil and gas reservoirs, and unminable coal seams.

(b) *Requirements for secure geological storage*. For purposes of the section 45Q credit, qualified carbon oxide is considered disposed of by the taxpayer in secure geological storage such that the qualified carbon oxide does not escape into the atmosphere if the qualified carbon oxide is—

- (1) Injected into a well that
 - (i) Complies with applicable Underground Injection Control or other regulations, located onshore or offshore under submerged lands within the territorial jurisdiction of States or federal waters, and
 - (ii) Is not used as a tertiary injectant in a qualified enhanced oil or natural gas recovery project, in compliance with applicable requirements under 40 CFR part 98 subpart RR; or
- (2) Injected into a well that
 - (i) Complies with applicable Underground Injection Control or other regulations, is located onshore or offshore under submerged lands within the territorial jurisdiction of States or federal waters, and
 - (ii) Is used as a tertiary injectant in a qualified enhanced oil or natural gas recovery project and stored in compliance with applicable requirements under 40 CFR part 98 subpart RR, or the International Organization for Standardization (ISO) standards endorsed by the American National Standards Institute (ANSI) under CSA/ANSI ISO 27916:2019, Carbon dioxide capture, transportation

and geological storage—Carbon dioxide storage using enhanced oil recovery (CO₂-EOR) (CSA/ANSI ISO 27916:2019).

(c) *Documentation*. Documentation must be filed in accordance with *Form 8933*.

(d) *Certification*. For qualified enhanced oil or natural gas recovery projects in which the taxpayer reported volumes of carbon oxide to the Environmental Protection Agency pursuant to 40 CFR part 98 subpart RR, the taxpayer may self-certify the volume of qualified carbon oxide claimed for purposes of section 45Q. For qualified enhanced oil or natural gas recovery projects in which the taxpayer determined volumes pursuant to CSA/ANSI ISO 27916:2019, a taxpayer may prepare documentation as outlined in CSA/ANSI ISO 27916:2019 internally, but all such documentation must be provided to a qualified independent engineer or geologist, who then must certify that the documentation provided, including the mass balance calculations as well as information regarding monitoring and containment assurance, is accurate and complete. The qualified independent engineer or geologist certifying a project must be duly registered or certified in any State. The certification must contain an affidavit from the certifying engineer or geologist stating that he or she is independent from the taxpayer (and if a section 45Q(f)(3)(B) election has been made, the affidavit must state that he or she is independent from both the electing taxpayer and the credit claimant). Certifications must be made annually and under penalties of perjury. For any leaked amount of qualified carbon oxide (as defined in § 1.45Q-5(c)) that is determined pursuant to CSA/ANSI ISO 27916:2019, the certification must also include a statement that the quantity was determined in accordance with sound engineering principles. Taxpayers that capture qualified carbon oxide giving rise to the section 45Q credit must file *Form 8933* with a timely filed Federal income tax return or *Form 1065*, including extensions or for the purpose of this rule, amendments to Federal income tax returns, *Forms 1065*, or on AARs, as applicable. Taxpayers that dispose of, inject, or utilize qualified carbon oxide must also file *Form 8933* with a timely filed Federal income tax return or *Form 1065*, including extensions or for the purpose of this rule, amendments to Federal income tax returns, *Forms 1065*, or on AARs, as applicable. If the volume of carbon oxide certified and reported is a negative amount, see § 1.45Q-5 for rules regarding recapture.

(e) *Failure to submit complete documentation or certification.* No section 45Q credit is allowed for any taxable year for which the taxpayer (including credit claimants) has failed to timely submit complete documentation and certification that is required by this regulation or *Form 8933*. The credit will be allowed only for a taxable year for which complete documentation and certification has been timely submitted. Certifications for each taxable year must be submitted by the due date of the federal income tax return or *Form 1065* on which the section 45Q credit is claimed, including extensions. However, if a section 45Q credit is claimed on an amended Federal income tax return, an amended *Form 1065*, or an AAR, as applicable, certifications may also be submitted with such amended Federal income tax return, amended *Form 1065*, or AAR. Further, if a section 45Q credit was claimed on a timely filed Federal income tax return or *Form 1065* for a taxable year ending on or after January 1, 2018, and beginning on or before January 13, 2021, for which certifications were not submitted, such certifications may be submitted with a timely filed amended Federal income tax return, an amended *Form 1065*, or an AAR, as applicable, for such taxable year.

(f) *Applicability date.* This section applies to taxable years beginning on or after January 13, 2021. Taxpayers may choose to apply this section for taxable years beginning on or after January 1, 2018, provided the taxpayer applies this section and §§ 1.45Q-1, 1.45Q-2, 1.45Q-4, and 1.45Q-5 in their entirety and in a consistent manner.

§ 1.45Q-4 Utilization of Qualified Carbon Oxide.

(a) *In general.* For purposes of this section, *utilization of qualified carbon oxide* means—

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

(2) The chemical conversion of such qualified carbon oxide to a material or chemical compound in which such qualified carbon oxide is securely stored, or

(3) The use of 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 enhanced oil or natural gas recovery project), as described in paragraph (d) of this section.

(b) *Amount utilized.*—(1) *In general.* For purposes of § 1.45Q-1(b) (ii) and (c)(2)(ii), the amount of qualified carbon oxide utilized by the taxpayer is equal

to the metric tons of qualified carbon oxide which the taxpayer demonstrates, based upon an analysis of lifecycle greenhouse gas emissions (LCA), were—

(i) Captured and permanently isolated from the atmosphere through use of a process described in paragraph (a) of this section, or

(ii) Displaced from being emitted into the atmosphere through use of a process described in paragraph (a) of this section.

(2) *Limitation.* The amount determined under paragraph (b)(1) of this section cannot exceed the amount of qualified carbon oxide measured at the source of capture.

(c) *Lifecycle greenhouse gas emissions and lifecycle analysis (LCA).*—(1) *In general.* For purposes of paragraph (b) of this section, the term *lifecycle greenhouse gas emissions* means the aggregate quantity of greenhouse gas emissions (including direct emissions and significant indirect emissions such as significant emissions from land use changes) related to the full product lifecycle, including all stages of product and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished product to the ultimate consumer, where the mass values for all greenhouse gases are adjusted to account for their relative global warming potential according to Table A-1 of 40 CFR part 98 subpart A. Such emissions are expressed in carbon dioxide equivalent (CO₂-e).

(2) *LCA verification.* The taxpayer verifies the amount of qualified carbon oxide utilized through an LCA. The LCA must demonstrate that the proposed process results in a net reduction of carbon dioxide equivalents when compared to a comparison system. The results of the LCA must be documented in a written LCA report.

(3) *Standards of adequate lifecycle analysis.* The LCA report must be prepared in conformity with and contain documentation that conforms with International Organization for Standardization (ISO) 14040:2006, *Environmental management—Life cycle assessment—Principles and framework and ISO 14044:2006, Environmental management—Life cycle assessment—Requirements and guidelines*. The LCA may consist of direct and indirect data in conformity with ISO 14040:2006 and 14044:2006.

(4) *Third-party independent review of LCA.* The LCA report must be performed or verified by an independent third party. The LCA report must provide a statement documenting the qualifications of the independent third

party, including proof of appropriate U.S. or foreign professional license, an affidavit from the third party stating that it is independent from the taxpayer (if a section 45Q(f)(3)(B) election has been made, the affidavit must state that the third party is independent from both the electing taxpayer and the credit claimant), and the statement must be made under penalties of perjury. If an independent third-party review is conducted, then it must include an assessment of the model and supporting data.

(5) *Submission of the LCA.* The taxpayer must submit the LCA report and third-party independent statement required by paragraph (c) of this section to the IRS and the Department of Energy. The taxpayer must also submit the model if the LCA is not verified by an independent third-party review.

(6) *LCA review.* The LCA report will be subject to a technical review by the DOE. The IRS will determine whether to approve the LCA and will notify the taxpayer. The taxpayer must receive approval of its LCA prior to claiming the section 45Q credits for such taxable year on any federal income tax return. In addition to receiving approval of its LCA, the taxpayer must satisfy all other requirements of section 45Q and §§ 1.45Q-1, 1.45Q-2, and this section in order to be eligible to claim section 45Q credits.

(d) *Commercial market.* A commercial market means a market in which a product, process, or service that utilizes carbon oxide is sold or transacted on commercial terms. A taxpayer must submit a statement attached to its *Form 8933* substantiating that a commercial market exists for its particular product, process, or service.

(e) *Applicability date.* This section applies to taxable years beginning on or after January 13, 2021. Taxpayers may choose to apply this section for taxable years beginning on or after January 1, 2018, provided the taxpayer applies this section and §§ 1.45Q-1, 1.45Q-2, 1.45Q-3, and 1.45Q-5 in their entirety and in a consistent manner.

§ 1.45Q-5 Recapture of Credit.

(a) *Recapture event.* A recapture event occurs when qualified carbon oxide for which a section 45Q credit has been previously claimed ceases to be disposed of in secure geological storage (as described in § 1.45Q-3(b)), or used as a tertiary injectant during the recapture period. Recapture events are determined separately for each project involving the disposal or use of qualified carbon oxide as a tertiary injectant. A recapture event does not occur if some portion of qualified

carbon oxide disposed of in the current year does not remain in secure storage at the end of the year. The amount of such carbon oxide that is securely stored in the current year is determined according to the applicable requirements of 40 CFR part 98 subpart RR or CSA/ANSI ISO 27916:2019.

(b) *Ceases to be disposed of in secure geological storage or used as a tertiary injectant.* Qualified carbon oxide for which a section 45Q credit has been previously claimed ceases to be disposed of in secure geological storage (as described in § 1.45Q-3(b)), or used as a tertiary injectant, if the leaked amount of qualified carbon oxide in the taxable year exceeds the amount of qualified carbon oxide securely stored in that same taxable year.

(c) *Leaked amount of qualified carbon oxide.* When a taxpayer that claimed a section 45Q credit with respect to qualified carbon oxide stored at a secure storage site, operator of the secure storage site, or regulatory agency with jurisdiction over the site determines that the qualified carbon oxide that was disposed of in secure geological storage has leaked to the atmosphere, the taxpayer or the party with whom the taxpayer contracted to ensure the secure geological storage of the qualified carbon oxide must quantify the metric tons of qualified carbon oxide that has leaked to the atmosphere pursuant to the requirements of 40 CFR part 98 subpart RR or CSA/ANSI ISO 27916:2019. The quantity determined pursuant to CSA/ANSI ISO 27916:2019 must be certified by a qualified independent engineer or geologist, including a statement that the quantity was determined in accordance with sound engineering principles in the same manner as required in § 1.45Q-3. The IRS will consider all available facts and circumstances, and may consult with the relevant regulatory agency with jurisdiction over such site, in verifying the amount of qualified carbon oxide that has leaked to the atmosphere. The verified amount is the leaked amount of qualified carbon oxide.

(d) *Qualified carbon oxide subject to recapture.* The quantity of recaptured qualified carbon oxide (in metric tons) subject to recapture is the amount by which the leaked amount of qualified carbon oxide exceeds the amount of qualified carbon oxide securely stored in the taxable year. The leaked amount of qualified carbon oxide shall be subtracted from the amount of qualified carbon oxide that is securely stored in the taxable year. If the leaked amount does not exceed the amount of qualified carbon oxide that is securely stored in the taxable year, then the taxpayer is

entitled to a credit equal to the amount of qualified carbon oxide securely stored less the leaked amount in the taxable year, multiplied by the appropriate statutory credit rate.

(e) *Recapture amount.* The recapture amount is equal to the product of the quantity of recaptured qualified carbon oxide (in metric tons) subject to recapture and the appropriate statutory credit rate.

(f) *Recapture period.* The recapture period begins on the date of first injection of qualified carbon oxide for disposal in secure geological storage or use as a tertiary injectant for which a section 45Q credit was claimed. The recapture period ends on the earlier of three years after the last taxable year in which the taxpayer claimed a section 45Q credit or was eligible to claim a credit that it elected to carry forward or the date monitoring ends under the requirements of the standards described in § 1.45Q-3(b)(1) or (2).

(g) *Application of recapture—(1) In general.* Any recapture amount must be taken into account in the taxable year in which it is identified and reported. If the leaked amount of qualified carbon oxide does not exceed the amount of qualified carbon oxide securely stored in the taxable year reported, there is no recapture amount and no further adjustments to prior taxable years are needed. If the leaked amount of qualified carbon oxide does exceed the amount of qualified carbon oxide securely stored in the taxable year reported, then the taxpayer must add the recapture amount to the amount of tax due in the taxable year in which the recapture event occurs.

(2) *Calculation.* Recapture amounts are calculated on a last-in-first-out basis (LIFO), such that the leaked amount of qualified carbon oxide that exceeds the amount of qualified carbon oxide securely stored in the current taxable year will be deemed attributable first to the prior taxable year, then to taxable year before that, and then up to a maximum of the third preceding year.

(3) *Multiple units.* In the event of a recapture event in which the leaked amount of qualified carbon oxide had been captured from multiple units of carbon capture equipment that were not under common ownership, the recapture amount must be allocated on a pro rata basis among the multiple units of carbon capture equipment. All taxpayers that claimed a section 45Q credit with respect to one or more of such units of carbon capture equipment are responsible for adding the recapture amount to their amount of tax due in the taxable year in which the recapture event occurs.

(4) *Multiple taxpayers—(i) In general.* In the event of a recapture event involving a leaked amount of qualified carbon oxide that is deemed attributable to qualified carbon oxide for which multiple taxpayers claimed section 45Q credits (for example, if ownership of the carbon capture equipment was transferred, or if a taxpayer made an election under section 45Q(f)(3)(B) to allow one or more credit claimants to claim a portion of the section 45Q credit), the recapture amount must be allocated on a pro rata basis among the taxpayers that claimed the section 45Q credits.

(ii) *Partnerships—(A) General rule.* For purposes of paragraph (g)(4)(i) of this section, if a partnership is one of the multiple taxpayers that claimed section 45Q credit amounts, the partnership and not its partners will be the taxpayer to which the pro rata recapture amount must be allocated. The partnership must allocate its pro rata recapture amount among its partners under § 1.704-1(b)(4)(ii).

(B) *Terminated partnerships.* If a partnership described in paragraph (g)(4)(ii)(A) of this section terminates under section 708(b)(1) prior to a recapture event, the partners of that terminated partnership at the time the section 45Q credit was claimed will be the taxpayers to which the pro rata recapture amount must be allocated.

(5) *Reporting.* If a recapture event occurs during a project's recapture period, any taxpayer that claimed a section 45Q credit for that project must report the following information on a *Form 8933* filed with that taxpayer's Federal income tax return or *Form 1065* for the taxable year for which the recapture event occurred—

(A) The recapture amount (as defined in § 1.45Q-5(e));

(B) The leaked amount of qualified carbon oxide (in metric tons) (as defined in § 1.45Q-5(c));

(C) The statutory credit rate(s) at which the section 45Q credits were previously calculated; and

(D) A statement that describes how the taxpayer became aware of the recapture event, how the leaked amount was determined, and the identity and involvement of any regulatory agencies.

(6) *Examples.* The following examples illustrate the principles of this paragraph (g):

(i) *Example 1.* (A) A owns direct air capture Facility X. No other taxpayer has owned Facility X, and A has never allowed another taxpayer to claim any section 45Q credits with respect to qualified carbon oxide captured by Facility X. Facility X captured 100,000 metric tons of carbon dioxide in each of

2021, 2022, and 2023. All captured carbon dioxide was sold to B for use as a tertiary injectant in a qualified enhanced oil recovery project. B provided contractual assurance that the carbon dioxide would be disposed of in secure geological storage. A claimed section 45Q credit amounts of \$2,268,000 in 2021, \$2,515,000 in 2022, and \$2,761,000 in 2023 using the statutory rates in § 1.45Q-1(d)(3). In 2024, A captured and sold another 100,000 metric tons of carbon dioxide to B, which B used as a tertiary injectant in a qualified enhanced oil recovery project. In late 2024, B determined that 10,000 metric tons of qualified carbon dioxide injected during 2021 had leaked from the containment area of the reservoir and were released into the atmosphere.

(B) Because the leakage determined in 2024 (10,000 metric tons) did not exceed the presumed amount stored in 2024 (100,000 metric tons), a recapture event did not occur in 2024. B's actual storage in 2024 is 90,000 metric tons of qualified carbon oxide. A's section 45Q credit for 2024 is \$2,706,300 (net 90,000 metric tons of qualified carbon oxide captured, disposed of in secure geological storage, and used as a tertiary injectant multiplied by the statutory credit rate for 2024 of \$30.07).

(ii) *Example 2.* (A) Assume same facts as in Example 1. Additionally, in 2025, B determines that 190,000 metric tons of qualified carbon dioxide injected in 2021 and 2022 had leaked and were released into the atmosphere. No injection of carbon dioxide takes place in 2025.

(B) Because the leakage determined in 2025 (190,000 metric tons) exceeds the amount stored in 2025 (0 metric tons), a recapture event occurred in 2025. A's credit for 2025 is \$0 because the net amount of carbon dioxide captured, disposed of in secure geological storage, and used as a tertiary injectant in 2025 was 0 metric tons. The 2025 recapture amount is calculated by multiplying the 190,000 metric tons of recaptured qualified carbon oxide by the appropriate statutory credit rate using the LIFO method. The first 90,000 metric tons of recaptured qualified carbon oxide is deemed attributable to 2024, and is recaptured at the 2024 statutory rate of \$30.07 per metric ton. The remaining 100,000 metric tons of recaptured qualified carbon oxide are deemed attributable to 2023. The credits attributable to 2023 are recaptured at the 2023 statutory rate of \$27.61 per metric ton. Thus, the total recapture amount is \$5,467,300, and is added to A's tax due for 2025.

(iii) *Example 3.* (A) Assume the same facts as in Example 2, except that A sells Facility X to C on January 1, 2024. C sells 100,000 metric tons of carbon dioxide captured by Facility X to B for use as a tertiary injectant in a qualified enhanced oil recovery project. C claims a section 45Q credit in 2024 of \$2,706,300 (net 90,000 metric tons of qualified carbon oxide captured, disposed of in secure geological storage, and used as a tertiary injectant multiplied by the statutory credit rate for 2024 of \$30.07).

(B) The total recapture amount in 2025 is the same \$5,467,300 as in Example 2, but is allocated between A and C. The first 90,000 metric tons of recaptured qualified carbon oxide are deemed attributable to 2024. The credits that are attributable to 2024 are recaptured at the 2024 statutory rate of \$30.07 per ton (for a recapture amount of \$2,706,300). Because C claimed that amount of section 45Q credit in 2024, a recapture amount of \$2,706,300 is added to C's tax due for 2025. The remaining 100,000 metric tons of recaptured qualified carbon oxide are deemed attributable to 2023. The credits that are attributable to 2023 are recaptured at the 2023 statutory rate of \$27.61 per ton (for a recapture amount of \$2,761,000). Because A claimed that amount of section 45Q credit in 2023, a recapture amount of \$2,761,000 is added to A's tax due for 2025.

(iv) *Example 4.* (A) Assume the same facts as in Example 2, except that in 2023, A made a section 45Q(f)(3)(B) election to allow B to claim one-half of the section 45Q credit for 2023. A and B each claimed \$1,380,500 of section 45Q credit in 2023 (50,000 metric tons each multiplied by the 2023 statutory rate of \$27.61).

(B) The total recapture amount in 2025 is the same \$5,467,300 as in Example 2, but is allocated among A and B. The first 90,000 metric tons of recaptured qualified carbon oxide is deemed attributable to 2024. The section 45Q credit amounts attributable to 2024 are recaptured at the 2024 statutory rate of \$30.07 per ton (for a recapture amount of \$2,706,300). Because A claimed that amount of section 45Q credit in 2024, \$2,706,300 is added to A's tax due for 2025. The remaining 100,000 metric tons of recaptured qualified carbon oxide is deemed attributable to 2023. The section 45Q credit amounts attributable to 2023 are recaptured at the 2023 statutory rate of \$27.61 per ton (for a recapture amount of \$2,761,000). Because A and B each claimed half of that amount (\$1,380,500) of section 45Q credit in 2023, \$1,380,500 is added to

both A's and B's tax due for 2025. Thus, a recapture amount of \$4,086,800 is added to A's tax due for 2025, and a recapture amount of \$1,380,500 is added to B's tax due for 2025.

(v) *Example 5.* (A) Assume the same facts as in Example 2, except that the 100,000 metric tons of carbon dioxide sold to B in 2021, 2022, 2023, and 2024 for use as a tertiary injectant in a qualified enhanced oil recovery project were captured equally (50,000 metric tons per year) from qualified facilities owned by J and K. Neither J nor K made a section 45Q(f)(3)(B) election to allow B to claim the credit.

(B) Because the leakage determined in 2024 (10,000 metric tons) did not exceed the presumed amount stored in 2024 (100,000 metric tons) a recapture event did not occur in 2024. The total amount of section 45Q credit for 2024 is \$2,706,300 (net 90,000 metric tons of qualified carbon oxide captured, disposed of in secure geological storage, and used as a tertiary injectant multiplied by the statutory credit rate for 2024 of \$30.07). J and K may each claim half of this amount of section 45Q credit (\$1,353,150) in 2024.

(C) The total recapture amount in 2025 is the same \$5,467,300 as in Example 2, but is allocated between J and K. The section 45Q credit amounts relating to the first 90,000 metric tons of recaptured qualified carbon oxide are deemed attributable to 2024 and are recaptured at the 2024 statutory rate of \$30.07 per ton (for a recapture amount of \$2,706,300). Because J and K each claimed half of that amount (\$1,353,150) of section 45Q credit in 2024, \$1,353,150 is added to both J's and K's tax due for 2025. The section 45Q credit amounts relating to the remaining 100,000 metric tons of recaptured qualified carbon oxide are deemed attributable to 2023 and are recaptured at the 2023 statutory rate of \$27.61 per ton (for a recapture amount of \$2,761,000). Because J and K each claimed half of that amount (\$1,380,500) of section 45Q credit in 2023, an additional \$1,380,500 is added to both J's and K's tax due for 2025. Thus, a total recapture amount of \$2,733,650 is added to both J's and K's tax due for 2025.

(vi) *Example 6.* (A) M owns Industrial Facility Z. No other taxpayer has ever owned Z, and M has never allowed another taxpayer to claim any section 45Q credits with respect to qualified carbon oxide captured from Z. M captured 1,000,000 metric tons of carbon dioxide annually in each of 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, and 2025. All captured carbon dioxide was sold to N for use a

tertiary injectant in a qualified enhanced oil recovery project. N provided contractual assurance that the carbon dioxide would be sequestered in secure geological storage. M claimed section 45Q credit amounts of \$12,830,000 in 2017, \$15,209,000 in 2018, \$17,760,000 in 2019, \$20,220,000 in 2020, \$22,680,000 in 2021, \$25,150,000 in 2022, \$27,610,000 in 2023, \$30,070,000 in 2024, and \$32,540,000 in 2025 using the statutory rates in § 1.45Q–1(d)(3). No injection of carbon oxides takes place in 2026. In 2026, N determined that 6,200,000 metric tons of qualified carbon dioxide previously injected had leaked from the containment area of the reservoir and were released into the atmosphere.

(B) Because the leakage determined in 2025 (6,200,000 metric tons) exceed the amount stored in 2026 (0 metric tons) a recapture event occurred in 2026. A's credit for 2026 is \$0 because the net amount of carbon dioxide captured and used as a tertiary injectant in 2026 was 0 metric tons. The 2026 recapture amount is calculated by multiplying the 6,200,000 metric tons of recaptured qualified carbon oxide by the appropriate statutory credit rate using the LIFO method. The first 1,000,000 metric tons of recaptured qualified carbon oxide is deemed attributable to 2025, and is recaptured at the 2025 statutory rate of \$32.54 per metric ton. The next 1,000,000 metric tons of

recaptured qualified carbon oxide is deemed attributable to 2024, and is recaptured at the 2024 statutory rate of \$30.07 per metric ton. The next 1,000,000 metric tons of recaptured qualified carbon oxide is deemed attributable to 2023, and is recaptured at the 2023 statutory rate of \$27.16 per metric ton. The remaining 3,200,000 metric tons are not subject to recapture because of the three-year lookback limit in § 1.45Q–1(g)(2). Thus, the total recapture amount is \$89,770,000, and is added to A's tax due for 2026.

(h) *Recapture in the event of deliberate removal from storage*—(1) *In general.* If qualified carbon oxide for which a credit has been claimed is deliberately removed from a secure geological storage site, then a recapture event would occur in the year in which the qualified carbon oxide is removed from the storage site pursuant to § 1.45Q–5(a).

(2) *Recycled qualified carbon oxide.* If qualified carbon oxide for which a credit has been claimed is recaptured, recycled, and reinjected as part of the enhanced oil and natural gas recovery project, that qualified carbon oxide will be considered recycled carbon oxide under section 45Q(c)(2). If recycled carbon oxide is reinjected into the same qualified enhanced oil or natural gas recovery project it was originally injected into, it will not be considered deliberately removed from a secure

geological storage site for purposes of paragraph (h)(1) of this section. If recycled carbon oxide is reinjected into a different qualified enhanced oil or natural gas recovery project from the one it was initially injected into, or used for any other purpose, that qualified carbon oxide will be considered deliberately removed from a secure geological storage site for purposes of paragraph (h)(1) of this section.

(i) *Limited exceptions.* A recapture event is not triggered in the event of a loss of containment of qualified carbon oxide resulting from actions not related to the selection, operation, or maintenance of the storage facility, such as volcanic activity or terrorist attack.

(j) *Applicability date.* This section applies to taxable years beginning on or after January 13, 2021. Taxpayers may choose to apply this section for taxable years beginning on or after January 1, 2018, provided the taxpayer applies this section and §§ 1.45Q–1, 1.45Q–2, 1.45Q–3, and 1.45Q–4 in their entirety and in a consistent manner.

Sunita Lough,

Deputy Commissioner for Services and Enforcement.

Approved: December 31, 2020.

David J. Kautter,

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