



August 1, 2020

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Room 5203

Internal Revenue Service

P.O. Box 7604

Ben Franklin Station

Washington, D.C. 20044

**Re: Notice of Proposed Rulemaking on Section 45Q
Credit for Carbon Oxide Sequestration (Docket IRS-2020-0013)**

This letter is submitted in response to the notice of proposed rulemaking (NPRM) for the Credit for Carbon Oxide Sequestration, 85 Fed. Reg. 34050 (June 2, 2020).

We are an ad hoc collection of companies that approach implementation of section 45Q from an economic-based and commercially pragmatic perspective. Our group includes representatives from the following industries: direct air capture, distributed power generation, carbon capture project development, and carbon dioxide enhanced oil recovery (CO₂-EOR) that capture CO₂ from natural gas processing, ethanol and fertilizer facilities. We are geographically diverse and include participants from Michigan, Oklahoma, Rhode Island, Texas and Canada. Each company in the group is either currently engaged in carbon capture or secure geologic storage, or is developing projects (some of which have been announced) or licensing technology which will involve carbon capture and disposal, injection or utilization. The proposed and final regulations for the Section 45Q credit impact us daily.

The effort by our group has been a significant undertaking, including our submission in mid-2019 of a comprehensive set of draft regulations for consideration in response to Notice 2019-32. Each participating company, through individual employees and contractors, has made significant contributions to our work product.

We believe the final 45Q regulations should both provide clear requirements for qualifying for the credits and foster investment certainty for carbon capture projects. Section 45Q should be implemented in a manner that provides the utmost clarity for project developers, operators and tax equity investors. We encourage adoption of final regulations that will provide sufficient precision and completeness to avoid project delays.

Our detailed comments are organized by number, and the order of the comments generally follows the order of the proposed regulations. We believe all of our comments have merit, but we would draw special attention to the following:

- Definitions of terms and their consistent use throughout the regulations are critically important to eliminate confusion and reduce uncertainty. Important definition changes are needed to:
 - Carbon capture equipment (Comment 11)
 - CO₂ Production Wells Exclusion (Comment 13)
 - 80/20 Rule is unfairly limited in scope and application (Comment 21-22)
 - Direct air capture facilities are unfairly excluded from one regulation requiring “emissions” to occur (Comment 19)
- We agree with the definition of electricity generating facility as proposed (Comment 15)
- The standard of certification by, and the required experience of, the third-party certifier should be expanded (Comment 32)
- We supply extensive comments regarding utilization verification (Comment 39), including examples of how we believe the LCA should apply while still ensuring that 45Q credits are only claimed for amounts of qualified carbon oxide and no other gas (Comments 37, 38 and 45). We also support developing criteria for utilization process approvals, and for approval in the final regulations of *fuels* as a commercial market and product for a utilization process (Comment 41).
- The recapture period should be 1 year instead of 5 years (Comment 49), the recapture period beginning date and the force majeure exception should be clarified (Comments 51-52), and a remedial action and cure period should be provided during the post-credit-claiming period (Comment 54)
- The start of the 12-year credit period needs to take into consideration both (a) the definition of “qualified carbon oxide” which requires the carbon oxide to be disposed of, injected or utilized pursuant to an approved plan or method, and (b) the timing of obtaining that approval (Comment 59)
- The Rev. Proc. 2020-12 should be modified to also allow partnerships for what the proposed regulations define as “credit claimants” (Comment 62)

In addition to providing Comments, we have included Exhibits that contain specific blackline edit suggestions to each of the proposed regulations. By recommending precise revisions to the proposed regulations, the Exhibits seek to provide sufficient details to explain our comments and our suggestions. For each edit to a proposed regulation, we reference the related Comment by number.

Our detailed comments and suggested revisions to the regulations provide the degree of certainty and clarity that is needed so that additional commercial capture projects can be deployed efficiently and effectively.

We appreciate the proposed regulations being issued in a manner that taxpayers can rely on them immediately.

In developing our comments, we have worked under the leadership of Keith Tracy of Cornerpost CO₂ LLC. If you have any questions regarding this submission, please contact Keith at 405-308-7289 or keith@keithtracy.com.

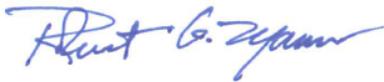
Sincerely,



Steve Oldham
CEO
Carbon Engineering Ltd.



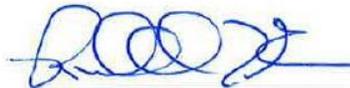
Paul Dunn
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cc: David Selig, Office of Associate Chief Counsel (Passthroughs & Special Industries)
Maggie Stehn, Office of Associate Chief Counsel (Passthroughs & Special Industries)

APPENDIX 1
List of companies

Carbon Engineering Ltd. is a global leader in the commercialization of a proprietary direct air capture technology that removes CO₂ directly from the atmosphere, and a second technology that synthesizes captured CO₂ into low carbon transportation fuels. Last year, Carbon Engineering and Oxy Low Carbon Ventures announced they are jointly proceeding with the engineering and design of the world's largest direct air capture and sequestration facility to be located in the U.S. <https://carbonengineering.com/>

CarbonPoint Solutions is a carbon capture technology development company, focused on the deployment of the patented semi-closed cycle (SCC) system. The SCC concentrates exhaust CO₂, rendering it less expensive to separate and capture. The company, formerly known as Enhanced Energy Group, is demonstrating its technology in capturing CO₂ from engines and turbines, especially those that generate distributed power. <http://carbonpoint.com/>

Core Energy, LLC is actively using innovative oil and gas exploration and production technologies in Michigan and is the only company in the Midwest performing CO₂ Enhanced Oil Recovery (EOR) operations. In addition, Core Energy is leading the way for carbon sequestration in conjunction with EOR operations in Michigan by hosting a public/private partnership to research the storage potential of Michigan's oilfields and deep saline reservoir geology. Core Energy is the second CO₂-EOR company to ever obtain an approved MRV Plan from the EPA. <http://www.coreenergyllc.com/>

Cornerpost CO₂ LLC is a carbon capture consulting company, and a project development company focused on capturing CO₂ emissions from ethanol and fertilizer plants. Founded by an expert in the carbon capture and CO₂ pipeline business, Cornerpost draws on over 13 years of experience of business development, project development, regulatory compliance and operations of carbon capture equipment. <https://cornerpostco2.com/>

Perdure Petroleum LLC is an oil and gas company focused in Oklahoma, Texas and Kansas and owned by multiple family offices. All of Perdure's oil production is through the CO₂-EOR process, and the vast majority of its CO₂ supply is from ethanol and fertilizer plants. Perdure owns and operates carbon capture equipment at three facilities, as well as approximately 200 miles of CO₂ pipelines. <https://perdurepetro.com/>

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Comment 1. Disposal, injection and utilization. While § 1.45Q-1(a) properly defines the terms disposal, injection and utilization, the proposed regulations in some instances fail to use these defined terms throughout the regulations and, in other instances, use the terms inconsistent with their definitions. Employing consistent terminology avoids confusion, and confusion breeds uncertainty, and uncertainty breeds higher transaction costs to finance projects incentivized by Section 45Q. It is of paramount importance to use the defined terms consistently throughout all the 45Q regulations. Detailed revisions are suggested in multiple regulations in the Exhibits.

Comment 2. Disposal and disposed of, injection and injected, and utilization and utilized. While the first paragraph in the regulations defines the nouns of disposal, injection and utilization, the verbs “disposed of, injected and utilized” are sometimes used in some of the regulations but could be employed more frequently to maintain definitional consistency in all the 45Q regulations. We suggest those verbs be defined in § 1.45Q-1(a) and those defined verbs be used consistently throughout all of the 45Q regulations. These precise definitions (both nouns and verbs) have particular importance in § 1.45Q-3 and § 1.45Q-5. Our detailed suggested revision to § 1.45Q-1(a) appears in Exhibit 1.

Comment 3. Disposed of. The proposed regulations use the phrase “disposed of in secure geological storage” in two very different ways, and amendments are needed in at least § 1.45Q-3 to eliminate the confusion this phrase can create. Even though “disposal” and “injection” (separately defined in § 1.45Q-1(a)) both include a common element of the qualified carbon oxide being disposed of in secure geological storage, the term “disposed of” is more often used throughout the proposed regulations in terms of “disposal” only. As a result, we propose that the term “disposed of” be used interchangeably with “disposal”, and the term “injected” be employed interchangeably with “injection”. In instances that call for both concepts to be included, we propose that both terms be used, such as “disposal and injection” or “disposed of and injected”. These changes appear in multiple Exhibits.

Comment 4. Binding written contract and liquidated damages. The description of the binding written contract in § 1.45Q-1(h)(2) is internally inconsistent. On the one hand the contract is permitted by § 1.45Q-1(h)(2)(iii)(B) to include liquidated damages provisions, but on the other hand the contract is defined in § 1.45Q-1(h)(2)(i) to exclude contracts that limit damages to a specified amount. Both statements cannot be true at the same time. We suggest that the phrase “, and does not limit damages to a specified amount” be eliminated from § 1.45Q-1(h)(2)(i). Our suggested revision to appears in Exhibit 1.

Comment 5. Contractually ensuring the capture of qualified carbon oxide. Section 45Q(f)(3)(A)(ii) provides that the person that owns the carbon capture equipment can either physically or contractually ensure the *capture* of the qualified carbon oxide. The same concept rightfully appears in § 1.45Q-1(h)(1)(ii). However, the concept is absent from § 1.45Q-1(h)(2) and should be included. It should be clarified that the owner of the carbon capture equipment is not required to physically carry out the capture of qualified carbon oxide to claim the credit as long as the owner contractually ensures that the party the physically carries out the capture does so under the regulations. Our suggested revision to § 1.45Q-1(h)(2) appears in Exhibit 1.

Comment 6. Multiple binding written contracts. The regulation in § 1.45Q-1(h)(2)(ii) is appropriately permissive with respect to a *taxpayer* entering into multiple binding written contracts with multiple parties for the disposal, injection, or utilization of qualified carbon oxide (each, a sequestration party). However, the regulation fails to address the possibility that a *sequestration party* may enter into a binding written contract with more than one person that owns carbon capture equipment or captures or

ensures the capture of qualified carbon oxide. By addressing the scenario for a taxpayer but ignoring the scenario for a sequestration party, the regulation could be improperly interpreted to imply that the earlier is permissible, but the latter is impermissible. To avoid that potential confusion and result, we have suggested revisions to § 1.45Q-1(h)(2)(ii) in Exhibit 1.

Comment 7. Reporting of e-GGRT information. We support the reporting of contract information related to the disposal or injection operator name and the e-GGRT ID number. However, it is unnecessary in § 1.45Q-1(h)(2)(iv)(D) to require the reporting of “the field, unit, and reservoir, location by county and state”. The Summary of Comments and Explanation of Provisions at 85 Fed. Reg. 34052 first column, fourth sentence provides the reason for collecting this information:

“For contracts for the disposal of carbon oxide or use 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 e-GGRT ID number will allow the IRS to reconcile information with data reported to the EPA’s Greenhouse Gas Reporting Program (GHGRP) and otherwise receive technical assistance from the EPA.”

To accomplish this purpose, the only information that the IRS needs is the operator name and the e-GGRT ID number. Identification of operator name is sufficient, and the e-GGRT ID number provides much of the remaining information. The request for the field, unit, reservoir, county and state is unnecessary because that information does nothing to advance the stated purpose of reconciling data provided to IRS and EPA. As a result, the request for the field, unit, reservoir, county and state is an impermissible information collection burden on the general public, in violation of the Paperwork Reduction Act.

In addition, the request for the field, unit, reservoir, county and state seeks information in a manner that is not consistent or compatible with existing reporting and recordkeeping practices. For example, any assumption that an e-GGRT ID number is associated with a single reservoir, field or unit is misplaced. In some instances, the e-GGRT ID number may encompass many reservoirs, may involve multiple fields, and may include multiple units. The request for the field, unit, reservoir, county and state should be eliminated, and our suggested revision to § 1.45Q-1(h)(2)(iv)(D) appears in Exhibit 1.

Comment 8. Election to allow the section 45Q credit to another taxpayer. The term “section 45Q(f)(3)(B) election” is used 7 times in §1.45Q-1(h)(3), and 3 times in § 1.45Q-5, but the term is not defined in the regulations. While the term is defined in the Summary of Comments and Explanation of Provisions at 85 Fed. Reg. 34052 second column, first paragraph, the defined term should be defined in the regulations. An appropriate place to define the term would be in § 1.45Q-1(h)(3) first paragraph, and we provide this suggested revision in Exhibit 1.

Comment 9. Requirements for credit claimant. The regulations permit an electing taxpayer to make a Section 45Q(f)(3)(B) election to allow *multiple* credit claimants to claim section 45Q credits in a given year. However, the first phrase of § 1.45Q-1(h)(3)(v) could be read to imply that a section 45Q(f)(3)(B) election is not valid unless *all* such credit claimants provide the required information in connection with their respective tax returns. In other words, the implication in § 1.45Q-1(h)(3)(v) could be drawn

(improperly, we believe, but still possibly) that the failure of a *single* credit claimant to supply the required information would render that year's election invalid for *all* credit claimants. We believe that is not the intent of the regulations, and we suggest in Exhibit 1 a clarification to § 1.45Q-1(h)(3)(v) that eliminates any confusion in this regard.

Comment 10. Qualified carbon oxide, not just any carbon oxide. In clause (A) of § 1.45Q-1(h)(3)(iv), and in clauses (C), (E) and (F) of § 1.45Q-1(h)(3)(v), the term “qualified carbon oxide” should be used instead of the generic term “carbon oxide”. The same change should also be made for the second time “carbon oxide” appears in the first sentence of § 1.45Q-3(d). We believe these are just drafting oversights. The statute and most of the other proposed regulations specify that the 45Q credits are only available with respect to *qualified* carbon oxide. Detailed revisions are suggested in the Exhibits.

Comment 11. Definition: Carbon capture equipment. The proposed definition of carbon capture equipment (a) creates confusion and should be simplified, (b) should be harmonized with the definition of the term in Notice 2020-12, and (c) should be clarified with respect to what components of property must be owned to qualify as a person to whom the credit is attributable, including for purposes of Rev. Proc. 2020-12.

The term “carbon capture equipment” appears throughout Section 45Q. Although it was never defined in the statute, it is sufficiently described in various parts of the law to indicate what “carbon capture equipment” means. A plain reading of the statute requires the following conclusions regarding the meaning of “carbon capture equipment”. We call these the “**7 Conclusions**”:

1. Carbon capture equipment must perform the function of *capturing* carbon oxide.
 - The dollar amount of the credit is only for carbon oxide that is *captured*. Section 45Q(a) uses the same language four times, in (1)(A), (2)(A), (3)(A), and (4)(A), to explain that the credit is allowed for “qualified carbon oxide which is *captured* by the taxpayer using carbon capture equipment”. The same phrasing is used in Section 45Q(b)(3).
 - Qualified carbon oxide is defined as carbon oxide that is “*captured* from an industrial source by carbon capture equipment” (Section 45Q(c)(1)(A)(i) and (B)(i)).
 - The direct air capture facility is defined in Section 45Q(e) to be a facility that “uses carbon capture equipment to *capture* carbon dioxide directly from ambient air”.
 - The taxpayer to whom the credit is attributable depends on the date the carbon capture equipment is originally placed in service but, whether that date is before, on or after February 9, 2018, the qualified carbon oxide must be “*captured* using carbon capture equipment” (Section 45Q(f)(3)(A)(i) and (ii)).
 - Nowhere in Section 45Q is a carbon oxide sequestration credit authorized for processing or transporting or doing anything else with the qualified carbon oxide unless the carbon oxide is first *captured* using carbon capture equipment.
2. With respect to capture from an industrial source, carbon capture equipment *prevents the release* of carbon oxide into the atmosphere.
 - Absent equipment being placed in service to capture carbon oxide from an industrial source, the carbon oxide from the industrial source “*would otherwise be released* into the atmosphere as industrial emission of greenhouse gas or lead to such release” (Section 45Q(c)(1)(A)(ii) and (1)(B)(ii)).
3. Carbon capture equipment is equipment that can be *placed in service at* a qualified facility.
 - Four times the statute explains that carbon capture equipment is “placed in service at a qualified facility” (Section 45Q(a)(1)(A), (2)(A), (3)(A), and (4)(A)).

4. Other than with respect to a direct air capture facility, carbon capture equipment may only capture carbon oxide from an industrial source. Section 45Q(c)(1)(A)(i) and (1)(B)(i).
 - The Section 45Q credit is only available for capture of carbon oxide from an industrial source or a direct air capture facility. Nowhere in Section 45Q is a carbon sequestration credit authorized for using carbon capture equipment to capture carbon oxide from an electricity generating facility¹ or any other source (other than a direct air capture facility).
5. With respect to direct air capture facilities, carbon capture equipment captures carbon dioxide “directly from the ambient air”. Section 45Q(e)(1)(A).
6. Carbon capture equipment is equipment that is owned by a single person.
 - Section 45Q(f)(3)(A)(ii) states that the credit is attributable, for equipment placed in service on or after February 9, 2018, to “the person that owns the carbon capture equipment”. The use of the word “the” indicates there must be a singular owner of the carbon capture equipment, and there cannot be two or more owners of various pieces of parts of carbon capture equipment.
7. Carbon capture equipment relates to capacity to capture carbon oxide.
 - When “additional” carbon capture equipment is placed in service at a qualified facility where original carbon capture equipment was placed in service, the “additional” equipment increases the capacity of the original carbon capture equipment. Section 45Q(b)(2). As a result, carbon capture equipment relates to its *capacity* to capture.

As a result of these 7 Conclusions, the Section 45Q statute essentially defines carbon capture equipment as follows:

Carbon capture equipment is 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. Carbon capture equipment placed in service at an industrial facility must capture carbon oxide from an industrial source. Carbon capture equipment placed in service at a direct air capture facility must capture carbon dioxide directly from the ambient air.

This is the definition of carbon capture equipment that should be used by the IRS.

We are not opposed to one definition of carbon capture equipment for purposes of beginning of construction, and a separate definition for purposes of claiming a 45Q credit. We recognize that such differences occur with respect to other energy-related tax credits and beginning of construction requirements. However, because the 45Q credit is attributable to the owner of the carbon capture equipment, and is likely the owner of the equipment to begin construction and to claim the credit, then we believe the definition of carbon capture equipment should be the same for the regulations and all 45Q-related guidance.

IRS has issued two separate definitions of carbon capture equipment. For many reasons (explained below), both definitions fail to maintain consistency with the 7 Conclusions above.

First, the definition of carbon capture equipment in Notice 2020-12 for the purposes of “beginning of construction” is deficient for many reasons. These are stated below in Reasons A through F:

¹ For our comments on the definition of qualified facility, see Comment 18.

- A. **“Or Process”**. By using the words “or process”, the definition expands the statute beyond its text and meaning. Section 3.05 appears to suggest that a credit would be allowed for capturing *or processing* carbon oxide, but Section 45Q(a) is clear that a credit is only allowed for “qualified carbon oxide which is *captured* by the taxpayer using carbon capture equipment”. Conclusion No. 1 above makes clear that the words “or process” should be removed from this definition.
- B. **“All”**. The use of the word “all” in the first sentence is problematic. Conclusion No. 6 above states that carbon capture equipment must be owned by a single person. The exemplar components of carbon capture equipment in Notice 2020-12 Section 5.02(1)(b) and (2)(c) are not always owned by the same person.
- For example, in approximately 2000, the CVR Partners’ fertilizer plant in Coffeyville Kansas commenced operations with a Selexol system including absorbers, sorbent vessels, reboilers, pressure vessels, piping, and pumps that separates CO₂ from other flue gases. Some of the separated CO₂ is used to manufacture urea while the rest of the separated CO₂ was vented. Beginning in 2013, a carbon dioxide capture facility was installed and is owned and operated by a third party (CO₂ Plant). The fertilizer plant installed and owns the “specially designed flue gas duct” to pipe the CO₂ from the fertilizer plant to the CO₂ plant, but the third party’s CO₂ Plant includes the CO₂ compressors, motors, dehydration system, glycol contactor, and pump. The third party pipelines the captured and compressed CO₂ to another location where it is used for enhanced oil recovery. It is well-known in the carbon capture industry and the enhanced oil recovery industry that what Section 45Q considers the “carbon capture equipment” is the CO₂ Plant that was installed at this fertilizer plant by the third party in 2013. But according to the IRS definition of that term, one might improperly conclude that some of the carbon capture equipment was installed in 2000 by CVR Partners and the rest was installed by the third party in 2013, all in violation of Conclusion No. 5. The more appropriate definition of “carbon capture equipment” would not include the word “all” and instead would focus on the purpose of the installed equipment in 2013, because it is performing the capture function with respect to CO₂ that was otherwise being released to the atmosphere.
 - For these reasons, any listing of components of carbon capture equipment should be a non-exhaustive list, and should merely be introduced with the statement that “carbon capture equipment *may* include but not be limited to the following components:”.
- C. **Parentetical**. We would suggest that the parentetical in the first sentence of Section 3.05 be removed as inaccurate. Equipment that merely separates carbon oxide from some other gas is not necessarily carbon capture equipment. For example, amines and selexols are used in separation equipment in hundreds of facilities throughout the country such as natural gas processing plants and fertilizer facilities to separate CO₂ from natural gas or other gases, and the separated CO₂ is then vented. While that separation equipment is used for the purpose of separation of carbon oxide that would otherwise be released into the atmosphere, no one considers that equipment to be “carbon capture equipment” because no carbon oxide is captured by the separator.
- At a minimum, the word “and/” should be deleted from the parentetical in the first sentence of Section 3.05. We are not aware of a single piece of equipment that would perform all four functions: separate, purify, dry *and* compress carbon oxide.
- D. **“Disposal, injection or utilization”**. The Notice 2020-12 appropriately employed the use of the terms “disposal, injection or utilization” in many instances, and that terminology should be repeated in Section 3.05.

- E. **“Multiple taxpayers and projects”**. The description in Section 3.05 of the single project rule is unfairly narrow in scope, because it only applies if there are already *two or more* taxpayers transporting on the large trunk pipeline, *and* only if the existing carbon oxide transported on that large trunk pipeline comes from *two or more* projects. It should suffice if the large trunk pipeline is transporting to or from a *single* other taxpayer, *or* to or from a *single* other project.
- For example, carbon oxide captured using carbon capture equipment at Project A is transported on Pipeline K by Taxpayer X. No other project’s carbon oxide is transported on Pipeline K, and no other taxpayer is transporting carbon oxide on the pipeline. Under the Section 3.05 description of the single project rule, the carbon capture equipment is precluded from including a system of gathering lines to constitute a single project because Pipeline K does not satisfy the requirement of being “a pipeline used to transport carbon oxide from multiple taxpayers and projects”. The IRS provided no rationale, and it is unreasonable, to allow the definition of a single project to be satisfied when the large trunk pipeline transporting qualified carbon oxide is transporting for two other taxpayers and two other projects, but for the definition to not be satisfied if only one other transporter is on that same large trunk pipeline.

We suggest that the definition of carbon capture equipment in the final regulations be the same one used in the beginning of construction guidance. In the alternative we would suggest, based on the above comments, the following revisions to the definition of “carbon capture equipment” that appears in Notice 2020-12:

Suggested Revision to Notice 2020-12 Section 3.05

Section 3.05 Carbon Capture Equipment. Carbon capture equipment ~~includes all components of property~~ is equipment that are is used to capture or process (for example, separation, purification, drying, and/or compression) carbon oxide until it is transported away from the qualified facility for disposal, injection, or utilization, or use as a tertiary injectant. The carbon capture equipment for a direct air capture facility must capture carbon oxide directly from the ambient air, and the carbon capture equipment for an industrial facility must capture carbon oxide which would otherwise be released into the atmosphere as industrial emission of greenhouse gas or lead to such release. For these purposes, carbon capture equipment includes a system of gathering 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 this notice) 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 multiple one or more other taxpayers and or² projects.

Second, in the proposed regulations at § 1.45Q-2(c), a definition of “carbon capture equipment” was provided that is different than the definition in Notice 2020-12. The same 7 Conclusions listed above should be applied to the definition in the proposed regulation. As a result, we would propose the revisions to the § 1.45Q-2(c) definition of “carbon capture equipment” that appear in Exhibit 2. We also

² We note that, while Notice 2020-12 Section 3.05 required a single project to transport qualified carbon oxide to a pipeline used to transport carbon oxide from multiple taxpayers *and* projects, NPRM § 1.45Q-2(c)(3) allowed the pipeline to be used to transport carbon oxide from multiple taxpayers *or* projects. This difference should not exist, because a single project for beginning of construction should be the same as a single project for purposes of the rule. The word “or” should be used in both instances.

propose that the definition of carbon capture equipment be the same in the beginning of construction guidance and the final regulations.

Comment 12. Definition: Industrial facility. The “industrial facility” definition should be modified to include within its scope an “electricity generating facility”, because the statute requires that conclusion. The introductory phrase of Section 45Q(d) defines a qualified facility as being limited to only the following:

- industrial facilities, and
- direct air capture facilities.³

Section 45Q(d)(2)(B) makes clear that an “electricity generating facility” is a qualified facility. So, for a Section 45Q(d)(2)(B) “electricity generating facility” to be considered a qualified facility, the “electricity generating facility” must be included within the definition of either an industrial facility or a direct air capture facility. Since a direct air capture facility is narrowly defined in Section 45Q(e) to exclude the possibility of including an electricity generating facility, then – by process of elimination – Section 45Q(d) must be interpreted to require that an “electricity generating facility” be included within the definition of an “industrial facility”.

This is not just semantics. Portions of the proposed regulations presume that an electricity generating facility is included within the scope of an industrial facility. If an electricity generating facility is not included within the scope of an industrial facility, then major portions of Section 45Q will have been interpreted incorrectly and significant confusion will have been introduced. Those portions of the proposed regulations that presume an electricity generating facility is an industrial facility include:

- The proposed regulations at § 1.45Q-2(c)(1)(i) defines carbon capture equipment to include equipment that captures carbon oxide that would otherwise be released into the atmosphere “from an industrial facility”. If an electricity generating facility is not included within the scope of an industrial facility, then the carbon capture equipment definition falls woefully short. If an electricity generating facility is not an industrial facility, then carbon capture equipment installed at an electricity generating facility would not be able to satisfy the definition of “carbon capture equipment”. This conclusion is counter to everything else in Section 45Q, and cannot stand.
- The proposed regulations at § 1.45Q-2(d)(2) defines an industrial source as being limited to an emission of carbon oxide “from an industrial facility”. If an electricity generating facility is not an industrial facility, then carbon oxide emitted from an electricity generating facility would *not* be, by definition, an “industrial source”. The consequences of this conclusion are monumental. If an electricity generating facility is not an industrial facility, and therefore carbon oxide emitted from an electricity generating facility is not an industrial source, then that carbon oxide would never be able to qualify as “qualified carbon oxide”. The definition of “qualified carbon oxide” in Section 45Q(c)(1) and (2) is limited to carbon oxide that is “captured from an industrial source”. As a result, because of the wording of the regulations, as proposed, the capture of

³ The Summary properly described the definition of a “qualified facility” consistent with the statute, as being limited to “any industrial facility or direct air capture facility” (85 Fed. Reg. 34053, 3rd column, last two lines). There is no explanation in the Summary for why this Summary description of the “qualified facility” definition was not carried through to the text of the proposed rule.

carbon oxide emissions from an electricity generating facility cannot qualify as “qualified carbon oxide”. This result is the exact opposite of what the statute says.

This is a significant issue. The adverse consequences of the proposed regulations in this regard cannot be overstated. The failure to define an industrial facility as including an electricity generating facility would lead to an absurd result: that carbon capture on electricity generating facilities cannot qualify for 45Q credits. This major oversight can be remedied by simply following the text and meaning of the statute.

The proposed definition of “qualified facility” in the NPRM actually compounds this oversight. By defining qualified facility in § 1.45Q-2(g) (first sentence) as “any industrial facility, *electricity generating facility*, or direct air capture facility”, the proposed regulations lead to the conclusion that an electricity generating facility is a qualified facility and therefore must *not* be an industrial facility. By defining qualified facility as an industrial facility or electricity generating facility, the proposed regulations imply the two terms do not have the same meaning and that one is not included within the scope of the other. This is the exact opposite of what Section 45Q(d) requires. According to the statute, an electricity generating facility is an industrial facility and, solely as a result of that fact, is qualified to be a qualified facility. This statutory approach should be carried through into the regulations. Consequently, we suggest modifications to the industrial facility definition in the manner shown in § 1.45Q-2(d) in Exhibit 2.

Comment 13. Definition: CO₂ production wells exclusion to industrial facility definition. The exclusion in § 1.45Q-2(d)(1) relating to CO₂ production wells (CO₂ Production Wells Exclusion) should be revised to be consistent with CO₂-EOR industry practice, and should be a bright-line rule rather than a facts and circumstances determination.

In 2009, the IRS definition of “industrial facility” provided that “An industrial facility does not include a facility that produces CO₂ through CO₂ production wells at natural CO₂-bearing formations.”⁴ Four years later, the IRS noted, “‘CO₂ production wells’ and ‘natural carbon dioxide-bearing formation’ have not yet been defined.”⁵ Four months ago in Notice 2020-12, the IRS repeated its statement from 2009 without providing any additional details.⁶

The NPRM Summary incorrectly states that the proposed regulations “adopt this definition” from Notice 2020-12.⁷ The text of the proposed regulation at § 1.45Q-2(d)(1) is much different, did much more than merely adopt the 2009-83 and 2020-12 definition, and does not provide clarity on the matter but instead confuses the issue. Our comments on this matter are organized under the following headings:

- A. Lack of explanation for the proposed regulation
- B. Uses terminology that lacks definition
- C. Facts and circumstances of CO₂ concentration at low percentages can change during 12-year period
- D. Improper rejection of unanimously supported recommendations
- E. Purpose of the Exclusion, and the meaning of “CO₂ production well” in the industry

⁴ Section 3.02(b) of Notice 2009-83.

⁵ Internal Revenue Manual ¶ 4.41.1.3.5(4) (Dec 3, 2013)

⁶ Section 3.03 of Notice 2020-12 (issued February 2020).

⁷ Summary, 85 Fed. Reg. 34054, second column, first paragraph, last two sentences.

- F. 90% CO₂ concentration recognized by other federal agencies
- G. Potential adverse impact on proposed definition on existing MRV Plans
- H. Avoiding drilling for and producing CO₂ while venting methane

A. Lack of Explanation

The NPRM fails to provide any explanation for the new details in the CO₂ Production Wells Exclusion. The Summary at Section 2.d. regarding the definition of industrial facility does not contain any explanation for the newly defined term. The final regulations should provide an explanation for the CO₂ Production Wells Exclusion definition that is ultimately chosen.

B. Uses terminology that lacks definition

Without explanation, the NPRM expands the CO₂ Production Wells Exclusion to include a CO₂ production well at a “naturally-occurring subsurface spring”. However, the proposed regulations do not define a “naturally-occurring subsurface spring”. Presumably it is something different than a “natural CO₂-bearing formation”, but the NPRM does not explain the meaning of either term, nor any reason for inserting the additional language. In the event the final regulations use either or both terms, the final regulations should explain the meaning of the two quoted terms, the differences between the two, and the reasons why the term(s) are used in the CO₂ Production Wells Exclusion.

C. Facts and circumstances of CO₂ concentration at low percentages can change during 12-year period

It is well known in the natural gas production industry that low CO₂ concentrations in produced natural gas streams can increase over time.⁸ Natural gas wells with less than 10% CO₂ concentration in locations such as Michigan and the Permian Basin can gradually produce gases with CO₂ concentrations in excess of 10%. In the context of the 12-year credit period for 45Q credits, there can realistically be a situation during a 12-year credit period where the CO₂ concentration starts at less than 10% but exceeds 10% by the end of the credit period. As CO₂ concentrations change over time in production from natural gas wells, surely the IRS does not mean to convert a categorically excluded well into one that years later must be evaluated under a facts and circumstances analysis. We also do not believe the IRS wants to continuously make facts and circumstances decisions with respect to natural gas wells as their low percentage CO₂ concentration changes. In addition, tax equity investors may perceive uncertainty in a potential carbon capture equipment investment if the IRS, based on a facts and circumstances approach, could disallow credits for CO₂ concentrations in excess of 10% when the prior year the credits were not subject to a facts and circumstances analysis with respect to production from the same well. A different method must be developed that is more consistent with industry standards, methods and understanding, and that provides more certainty to tax equity investment.

⁸ See Bullin, K. and Krouskop, P., *Composition Variety Complicates Processing Plans for US Shale Gas*, presented to Gas Processors Association – Houston Chapter (Oct 7, 2008), at 7, available at <https://www.bre.com/PDF/Composition-Variety-Complicates-Processing-Plans-for-US-Shale-Gas.pdf> (“The carbon dioxide level in these samples varies from 0-9%. Carbon Dioxide is a naturally occurring byproduct of shale gas produced by desorption. As a result, the CO₂ levels in produced Antrim Gas steadily grow during a well’s productive life, eventually topping 30% in some areas.”); Cook, J., Echt, W., *Cost Effective Natural Gas Conditioning: Twelve Years Experience of Membrane System Operation*, available at <https://www.honeywell-uop.cn/wp-content/uploads/2011/02/UOP-Cost-Effective-Natural-Gas-Conditioning-Tech-Paper.pdf> (showing CO₂ content of inlet natural gas over a 12 year period increasing from 6% to over 15%); see also Wen, T., et al., *Assessing compositional variability and migration of natural gas in the Antrim Shale in the Michigan Basin using noble gas geochemistry*, *Chemical Geology* Vol. 417, pg 356, 360 (2015), available at <https://doi.org/10.1016/j.chemgeo.2015.10.029>.

D. Improper rejection of unanimously supported recommendations

The NPRM fails to acknowledge the unanimous recommendations made in response to Notice 2019-32. Summary Section 2.d. inaccurately states that commenters recommended the 2009 version of the CO₂ Production Wells Exclusion,⁹ because commenters in response to Notice 2019-32 in fact suggested much more than a mere recitation of the 2009 version of the exclusion. Even though only 8 of the 116 comments in response to Notice 2019-32 addressed this issue, *all 8 endorsed the same recommended language for the CO₂ Production Wells Exclusion.*¹⁰ No commenter suggested a different approach, and no commenter suggested the approach contained in the NPRM. The unanimous comments on this issue suggested the following draft regulation:

An industrial facility does not include a facility that produces CO₂ from a **CO₂ production well**, which is a well that produces from a natural CO₂-bearing formation a gas or fluid consisting of more than 90 percent CO₂ molecules.¹¹

The commenters also supplied a rationale for their suggested definition:

Finally, a definition of CO₂ production well is provided, which the Internal Revenue Manual at 4.41.1.3.5(4) noted had not yet been defined. Excluded from an industrial facility is a CO₂ production well that produces at least a 90% pure stream of CO₂ from a natural CO₂-bearing formation. The 90% threshold is consistent with the definition of a carbon dioxide pipeline by the Department of Transportation Pipeline and Hazardous Materials Safety Administration which, at 49 CFR § 195.2, defines carbon dioxide for purposes of pipeline safety regulations as consisting of more than 90 percent carbon dioxide molecules. We do not believe the definition of “carbon dioxide production well” from 40 CFR § 98.6 should be used. For purposes of the EPA GHG reporting rule, “carbon dioxide production well means any hole drilled in the earth for the primary purpose of extracting carbon dioxide from a geologic formation or group of formations which contain deposits of carbon dioxide”. We believe a bright-line rule focused on the content of the produced gas stream (90 percent carbon dioxide molecules) is an objective standard that is easier to administer by the IRS, and easier for the taxpayer to determine. It is more challenging for a taxpayer to determine the intent of the person that drilled the well because, in many instances, the well was drilled by a person other than the current operator of the well and the intent of the person who drilled the well is unknown or not easily discernable.¹²

The NPRM provides no explanation for rejecting this unanimously suggested definition of a “CO₂ Production Well”. This previously suggested definition, supported by all commenters in response to Notice 2019-32 that addressed the issue, should be given great weight during development of the final regulations.

⁹ Summary Section 2.d. also states that the § 1.45Q-2(d)(1) exclusion is “consistent” with the February 2020 exclusion, but the February 2020 exclusion language is identical to the 2009 exclusion.

¹⁰ Comments IRS-2019-0026-0020, 0021, 0026, 0030, 0036, 0057, 0068, and 0093 submitted or endorsed the drafts set of regulations and explanations supplied by the “45Q Full Reg Project”.

¹¹ 45Q Full Reg Project comments in response to Notice 2019-32, IRS-2019-0026-0026, on page 28 of 81.

¹² *Id.*, page 29 of 81.

E. Purpose of the Exclusion, and the meaning of “CO₂ production well” in the industry

The proposed regulations ignore the purpose of the CO₂ Production Wells Exclusion, and the meaning of “CO₂ production well” in the carbon capture and CO₂-EOR industry. The purpose of the Exclusion is to ensure that 45Q credits cannot be claimed with respect to CO₂ that originated from naturally occurring carbon dioxide deposits or formations, which are known as “CO₂ Domes” or just “Domes” in the common vernacular of the CO₂-EOR industry. A “CO₂ production well” is a term well known in the carbon capture and CO₂-EOR industry and refers to a well that produces CO₂ from one of the Domes. The carbon capture and CO₂-EOR industry considers CO₂ production wells at the Domes to be wells that produce gas with CO₂ content equal to or exceeding 90%.

- Samples have been taken from what authors called “CO₂ production wells” at some of these Domes, and their CO₂ concentrations were: St. Johns Dome (92%), Jackson Dome (99%), and McElmo Dome (96-98%).¹³
- The Domes have been studied in the carbon capture industry as potential analogs for secure geologic storage. One study stated that 20 years ago coordinated research efforts were underway “to study naturally occurring carbon dioxide deposits, in order to address fundamental questions and concerns about the long-term storage of CO₂ in geologic formation.” The study then described the CO₂ content in each of the formations in the study: “Carbon dioxide occurs naturally as a result of geologic processes in large, often high-purity (>90%) deposits in many sedimentary basins.”¹⁴
- Another publication in the carbon capture industry further explains the 90% content as a bright-line distinction. In *Geochemistry of Geologic CO₂ Sequestration*, the authors describe naturally occurring geologic CO₂ sources or Domes as “pure CO₂ accumulations”, as differentiated from natural gas reservoirs containing meaningful percentages of CO₂ as “CO₂-rich hydrocarbon gas accumulations”, and then stated: “The 5 major CO₂ accumulations of the Colorado Plateau and southern Rocky Mountains region; Bravo Dome, St. Johns Dome, McCallum Dome, Sheep Mountain and McElmo Dome, comprise gas or supercritical fluids (>90% CO₂) hosted in a variety of sedimentary reservoirs”.¹⁵ In describing various natural analogues to CO₂ sequestration, the publication describes the St Johns CO₂ Dome in Arizona as a “CO₂ field”, a “natural CO₂ reservoir”, and a “pure CO₂ accumulation”.¹⁶
- The Domes are also known as CO₂ fields, natural CO₂ reservoirs, and “90+% pure CO₂ formations”. One publication lists many Domes (describing them as “major CO₂ fields”) and the typical CO₂ content of their production – all of which equal or exceed 90% CO₂ concentration.¹⁷

¹³ Thomas, D.C., Benson, S.M., *Carbon Dioxide Capture for Storage in Deep Geologic Formations – Results from the CO₂ Capture Project Vol. 2* (2015), pg 689-90, available at <https://books.google.com/books?id=SKIXBgAAQBAJ>.

¹⁴ Stevens, S.H., Pearce, J.M., Rigg, A.A.J., *Natural Analogs for Geologic Storage of CO₂: An Integrated Global Research Program*, in *Proceedings of the First National Conference on Carbon Sequestration*, US DOE NETL, Washington, D.C. (May 14-17, 2001) pgs 1-2, available at <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.204.8798&rep=rep1&type=pdf>.

¹⁵ DePaolo, D.J., Cole, D.R., Navrotsky, A., Bourg, I.C. editors, *Geochemistry of Geologic CO₂ Sequestration*, pg 31, available at <https://books.google.com/books?id=oa96DwAAQBAJ>.

¹⁶ DePaolo at pgs 18, 26.

¹⁷ Allis, R. et al, *Natural CO₂ Reservoirs on the Colorado Plateau and Southern Rocky Mountains: Candidates for CO₂ Sequestration*, in *Proceedings of the First National Conference on Carbon Sequestration*, US DOE NETL, Washington, D.C. (May 14-17, 2001) pgs 12-19, available at <https://pdfs.semanticscholar.org/579d/d5c0f9fd838025ccb5a86386b83bc740a3ec.pdf>. While the publication also listed “Big Piney – La Barge Area, Wyoming” as a production area with high CO₂ percentage, it stated the CO₂ content there is “typically 2/3 [67%] CO₂”. The CO₂ production area near LaBarge, WY is not considered by the CO₂-EOR industry as a “Dome” but rather a major source of natural gas and helium production, as explained in the

- Farnham Dome, Utah = 98.9% CO₂
- Gordon Creek, Utah = 98.82% CO₂
- Escalante, Utah = 93.1-96.1% CO₂
- McElmo Dome, Colorado = 98.2% CO₂
- Sheep Mountain, Colorado = 97% CO₂
- Bravo Dome, New Mexico = 99% CO₂
- Springerville, Arizona (a/k/a St Johns) = 90% CO₂¹⁸

As a result, according to the carbon capture and CO₂-EOR industry, a CO₂ Production Well is a well that produces from a natural CO₂-bearing formation a gas or fluid consisting of more than 90 percent CO₂ content. The NPRM proposed definition of a “CO₂ production well” is contrary to its common understanding in the industry, and the definition should be changed to match the industry understanding.

F. 90% CO₂ concentration recognized by other federal agencies

For decades, 90% CO₂ concentration has been the demarcation point for dividing “CO₂ production wells” and “naturally occurring CO₂ formations” from all other gas or hydrocarbon production. Even the federal EPA and the Department of Transportation (DOT) recognize this distinction. A well producing in excess of 90% CO₂ from the Sheep Mountain Dome was recognized in an EPA publication as a “CO₂ Production Well”.¹⁹ In addition, pipeline transport of CO₂ is regulated by DOT’s Pipeline and Hazardous Materials Safety Administration (PHMSA). According to PHMSA regulations, a CO₂ pipeline is one that transports a gas that consists of more than 90 % carbon dioxide.²⁰ Consistent with these other agencies, the IRS should adopt a 90% CO₂ content distinction in the CO₂ Production Well Exclusion.

G. Potential Adverse Impact of NPRM definition on Existing MRV Plans

Prior to issuance of the NPRM, the only IRS-recognized method of demonstrating secure geologic storage was compliance with EPA GHGRP subpart RR, including the MRV Plan requirements under that

Shute Creek MRV Plan approved by the EPA and available at <https://www.epa.gov/sites/production/files/2019-12/documents/shutecreekdecision2019.pdf>.

¹⁸ Other resources indicate St Johns – Springerville Dome contains gas composition in excess of 90%. See Stevens, S.H., Pearce, J.M., Rigg, A.A.J., *Natural Analogs for Geologic Storage of CO₂: An Integrated Global Research Program*, in *Proceedings of the First National Conference on Carbon Sequestration*, US DOE NETL, Washington, D.C. (May 14-17, 2001) pg 4, available at

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.204.8798&rep=rep1&type=pdf> (95% CO₂); Thomas, D.C., Benson, S.M., *Carbon Dioxide Capture for Storage in Deep Geologic Formations – Results from the CO₂ Capture Project Vol. 2* (2015), pg 689, available at <https://books.google.com/books?id=SKIXBgAAQBAJ> (92% CO₂).

¹⁹ General Technical Support Document for Injection and Geologic Sequestration of Carbon Dioxide: Subparts RR and UU, Greenhouse Gas Reporting Program (Nov 2010), pg 56, available at https://19january2017snapshot.epa.gov/sites/production/files/2015-07/documents/subpart-rr-uu_tsd.pdf, referencing W. Crow, B. Williams, D. Carey, J.W. Celia, S. Gasda, “Wellbore integrity analysis of a natural CO₂ producer,” *Energy Procedia*, Vol 1 (1), Proceedings GHGT-9, Washington, D.C., (2008), available at <https://doi.org/10.1016/j.egypro.2009.02.150> (describing a Sheep Mountain CO₂ Dome well in Colorado that produces 96% CO₂).

²⁰ 49 CFR § 195.2.

program.²¹ The EPA GHGRP office has only approved MRV Plans for 5 locations.²² Four of these locations involve CO₂ concentrations in produced natural gas and are listed below:

Source	Project Name	Date of MRV Plan Approval	CO ₂ Content
Century Plant	Oxy Denver Unit	Dec 22, 2015	~65% ²³
Century Plant	Oxy Hobbs Field	Jan 12, 2017	~65% ²⁴
Shute Creek Plant	Exxon Shute Creek Facility	June 20, 2018 and Dec 19, 2019	66% ²⁵
South Chester Plant	Core Energy	Oct 12, 2018	17-30% ²⁶

Prior to issuance of the NPRM, there was no question in the carbon capture industry that each of these projects involved qualifying carbon capture equipment installed at a qualifying industrial facility. However, based on the NPRM’s description of the CO₂ Production Well Exclusion, none of these projects are categorically removed from the CO₂ Production Well Exclusion – even though they should be. Instead, as a result of the NPRM description of the CO₂ Production Well Exclusion, whether any well involved in these 4 projects “is producing from a natural carbon dioxide-bearing formation is based on all the facts and circumstances”. The NPRM has unnecessarily introduced questions and uncertainty where there was no reason to do so. A bright-line rule of a 90% CO₂ concentration level would easily solve this issue and eliminate any uncertainty the NPRM may have created. This uncertainty should be eliminated in the final regulations, which should adopt the bright-line 90% CO₂ concentration approach.

Based on the above comments regarding the CO₂ Production Well Exclusion, we have provided our suggested revision to § 1.45Q-2(d)(1) in Exhibit 2.

H. Avoiding drilling for and producing CO₂ while venting methane

We struggle to conceive the rationale that would support the “less than 10% rule” in the proposed regulations. One possible theory is that the proposed regulation may seek to discourage taxpayers from the following enterprise: drilling a natural gas well for the sole purpose of producing associated geologic CO₂, and disposing of or injecting the produced CO₂ and claiming 45Q credits as a result but, in the process, vent or flare or otherwise not sell the methane and any other natural gas produced from that well. We would agree that such an enterprise should not qualify for 45Q credits, especially when the emissions associated with the global warming potential of the vented or flared natural gas exceed the amount of CO₂ disposed of or injected. If we have correctly identified the concern, then we would be

²¹ Notice 2009-83 § 5.02(b)(iii); Internal Revenue Manual (12-03-2013) ¶ 4.41.1.3.5(8)-(11) (requiring subpart RR compliance including MRV Plan procedures for tax years after 2010); Form 8933 instructions; Notice 2019-32 Section 3.01.

²² <https://www.epa.gov/ghgreporting/subpart-rr-geologic-sequestration-carbon-dioxide>

²³ Section 3.2 of Gas Treating and CO₂ Delivery Agreement related to Century Plant, available at <https://www.sec.gov/Archives/edgar/data/1349436/000095013408014565/d58970exv10w2.htm>.

²⁴ Section 3.2 of Gas Treating and CO₂ Delivery Agreement related to Century Plant, available at <https://www.sec.gov/Archives/edgar/data/1349436/000095013408014565/d58970exv10w2.htm>.

²⁵ Section 2.6 of ExxonMobil’s Final MRV Plan, available at <https://www.epa.gov/sites/production/files/2019-12/documents/shutecreekdecision2019.pdf>

²⁶ Order pg 14, Michigan Public Service Commission Case No. U-16230, available at https://www.michigan.gov/documents/mpsc/u-16230_5-14-15_569263_7.pdf; In re Antrim Shale Formation, Case No. 327723 & 330161 (Mich. Ct. App. March 21, 2017), available at <https://caselaw.findlaw.com/mi-court-of-appeals/1854176.html>.

willing to support the following modification to our bright-line 90% CO₂ concentration approach in Exhibit 2 at § 1.45Q(2)(d)(1) to accommodate this concern:

A carbon dioxide production well is a well that produces either (a) a gas or liquid that contains more than 90 percent carbon dioxide by volume, or (b) natural gases and carbon dioxide but none of the natural gases are sold.

Comment 14. Definition: Manufacturing process. We do not support the need for a definition of manufacturing process for purposes of section 45Q and, if a definition is desired in § 1.45Q-2(d)(3), we believe it needs to be modified for two important reasons.

A facility that produces a carbon oxide stream from any *manufacturing process* has been considered an industrial facility for purposes of Section 45Q. The inclusion of a manufacturing process in the industrial facility definition was provided by the IRS in 2009²⁷ and again in February 2020.²⁸ Four months later, without explanation, the IRS now proposes a narrower definition of a manufacturing process for purposes of a Section 45Q industrial facility. We have reviewed the 116 comments made in response to Notice 2019-32, and we cannot find a recommendation for this new definition of manufacturing process. We do not believe the definition is needed.

If the definition of manufacturing process is desired, we believe the definition should be clarified for two important reasons.

First, when the proposed definition requires a manufacturing process to involve the “manufacture of products”, the proposed definition’s use of the plural form of “products” unfortunately could indicate that the manufacturing process must produce at least two products, excluding manufacturing processes that only result in the production of a single product. For example, the proposed definition would exclude a paper mill that only manufactures paper towel rolls and no other product, even if that paper mill made thousands of paper towel rolls annually. Because the paper mill must manufacture multiple “products” to satisfy the definition, the paper mill would only qualify if it made another product (such as tissue boxes). We believe the intention is to require the manufacture of more than one unit of at least one product and, in our example, as long as the paper mill made multiple paper towel rolls, or made multiple tissue boxes, then that manufacturing process would meet the definition. The example in § 1.45Q-2(d)(4) increases this concern because it discusses carbon dioxide as the “product” in the singular, rather than discussing multiple metric tons of carbon dioxide as the “products”. If “products” in § 1.45Q-2(d)(3) means multiple classes (instead of units) of products, then this brand-new definition unfairly excludes manufacturers who specialize in making units of a single product. There is no justification for such a limitation, especially when the intent of Congress in enacting and modifying the credit was to increase the amount of carbon oxide that is captured and sequestered from all sectors. Our suggested revision to § 1.45Q-2(d)(3) to address this issue appears in Exhibit 2.

Second, the § 1.45Q-2(d)(3) definition was not appropriately applied in the § 1.45Q-2(d)(4) example. In the fifth sentence of the example, some of the methane is used as a fuel to power

²⁷ Notice 2009-83 Section 3.02(a).

²⁸ Notice 2020-12 Section 3.03.

the processing equipment. However, the example neglects to analyze such methane, which was in fact used for a commercial purpose. Section 1.45Q-2(d)(3) states that a process involving the manufacture of products that are used for a commercial purpose is a “manufacturing process”, which qualifies as an industrial facility for Section 45Q purposes. There is no question that the manufactured methane in the example was used for a commercial purpose. It was used to power processing equipment, which saved the taxpayer from having to otherwise purchase natural gas from a pipeline, utility or other supplier of natural gas. Because it reduced the taxpayer’s operational expenses, the use of the methane was a commercial purpose. For this reason, the statement in the ninth sentence of the example is inaccurate. The example in § 1.45Q-2(d)(4) should be modified to recognize that, to the extent carbon oxide was captured from the process that manufactured the methane that fueled and powered the processing equipment, that carbon oxide should be considered qualified carbon oxide because such manufactured methane was used for a commercial purpose. Our suggested revisions in this regard appears in § 1.45-2(d)(4) in Exhibit 2.

Comment 15. Definition: Electricity generating facility. We support the proposed definition of electricity generating facility in § 1.45Q-2(e). Using the MACRS Asset Classes is a good approach to defining the term, and the asset classes selected in the definition are appropriate.

Comment 16. Definition: Direct air capture and photosynthesis. Direct air capture facilities inherently may capture nominal amounts of CO₂ using natural photosynthesis. The CO₂ present in the air not only consists of CO₂ vented from industrial sources but also contains small amounts of CO₂ that was produced by plant life through natural photosynthesis. If the definition of direct air capture facility is strictly interpreted to not allow for capture of even nominal amounts of CO₂ produced through natural photosynthesis, then no direct air capture facility could ever qualify for the definition. That clearly was not the intent of Congress. As a result, the exclusion of CO₂ sourced from natural photosynthesis needs to be modified to avoid such a strict interpretation. We previously proposed that this issue be clarified, and we now propose the change to § 1.45Q-2(f) that appears in Exhibit 2.

Comment 17. Definition: Deliberate release of CO₂ from naturally occurring subsurface spring. Naturally occurring subsurface springs are not defined in the 45Q statute or the proposed regulations, even though the term is used once in the statute and twice in the proposed regulations: (1) CO₂ production wells at a naturally occurring subsurface springs are excluded from an industrial facility by § 1.45Q-2(d)(1); and (2) Facilities that capture CO₂ that is deliberately released from naturally occurring subsurface springs are excluded from a direct air capture facility by Section 45Q(e)(1)(B)(i) and § 1.45Q-2(f). This is the only instance where the term is used in the US Code, and the term has never before been used in the Code of Federal Regulations.

We support that 45Q credits should not be available to persons that seek to generate credits by deliberately releasing CO₂ from naturally occurring subsurface springs and then capture that deliberately released CO₂ using carbon capture equipment in a direct air capture facility. We believe a clear definition of a deliberate release of CO₂ from naturally occurring subsurface spring would be helpful. We want to ensure that direct air capture facilities are not unintentionally excluded from qualifying for 45Q credits. The more definitive the regulations can be on this issue, the more certainty is provided that direct air capture facilities can satisfy the definition of a direct air capture facility. We previously proposed a definition, which we now propose to be added as a new sentence at the end of § 1.45Q-2(f), which appears in Exhibit 2.

Comment 18. Definition: Qualified facility. While the definition for “qualified facility” in Section 45Q(d) is complex and cumbersome, especially after the 2018 amendments, the NPRM description of a “qualified facility” is a good definition but has one shortcoming.

The general definition in § 1.45Q-2(g) properly recognizes that it is the “carbon capture equipment” that performs the function of “capturing” the carbon oxide, and that it is not the industrial facility or direct air capture facility per se that “captures the requisite annual threshold of carbon oxide”.

However, the introductory phrase of § 1.45Q-2(g)(1) fails to carry forward the concept that the “carbon capture equipment” is the actor that “captures” the carbon oxide. Instead, the NPRM improperly states that “the facility” must capture the requisite annual threshold of carbon oxide. If the introductory phrase of § 1.45Q-2(g)(1) stated that the “carbon capture equipment placed in service at the facility must capture”, then § 1.45Q-2(g)(1) would be consistent with the language § 1.45Q-2(g) and the 45Q statute generally.

This distinction makes a significant difference. For example, an industrial facility owned by Taxpayer A is placed in service in 2007 and Taxpayer B in 2021 begins construction of carbon capture equipment at the facility, places the carbon capture equipment in service in 2025 and captures 600,000 metric tons of qualified carbon oxide from the facility in 2026. It seems that the introductory phrase of § 1.45Q-2(g)(1) could be interpreted to prevent Taxpayer B from claiming a Section 45Q credit because *the “carbon capture equipment”* owned by Taxpayer B is what “captured” the carbon oxide, when the introductory phrase of § 1.45Q-2(g)(1) imposes a requirement that “*the facility*” owned by Taxpayer A is the one that “must capture” the carbon oxide.

Requiring “the facility” rather than the “carbon capture equipment” to perform the capture function is inconsistent with other portions of Section 45Q and the NPRM. The 45Q Full Reg Project made this point on the bottom of Page 32 and top of Page 33 of its comment in response to Notice 2019-32, and we incorporate those comments by reference here. Those comments explain that, to properly implement the amendments to Section 45Q made by the Bipartisan Budget Act of 2018, the definition of “qualified facility” must acknowledge that the capture function is performed by the “carbon capture equipment” instead of the “facility”. The introductory phrase of § 1.45Q-2(g)(1), as proposed in the NPRM, would return the definition of “qualified facility” to the pre-2018 version of the statute, and ignore the 2018 amendments. If the taxpayer entitled to claim the credit is the owner of the carbon capture equipment instead of the owner of the qualified facility, as stated in many other parts of Section 45Q, then that concept must be implemented in the “qualified facility” definition as well.

A suggested revision to § 1.45Q-2(g)(1) is provided in Exhibit 2 to address this issue.

Comment 19. Definition: Annualization of first year “emissions”. While we support the annualization of the first-year capture amounts described in § 1.45Q-2(g)(3), we believe this proposed regulation could be interpreted to be limited to only facilities that have “emissions” and possibly be inapplicable to direct air capture facilities. We believe this is a drafting oversight, as 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), but also the maximum emission amounts in § 1.45Q-2(g)(1)(i). We suggest the final regulation at § 1.45Q-2(g)(3) be revised to eliminate this possible issue, and our suggested revision appears in Exhibit 2.

Comment 20. Definition: Applicable facility. The description of the person entitled to make the applicable facility election needs to be clarified. The section 45Q(f)(6) election discussed in § 1.45Q-2(g)(4) is only for an applicable facility which, in part, is defined by Section 45Q(f)(6)(B)(i) as a qualified facility that was placed in service *before* February 9, 2018. Section 45Q(f)(6)(A) states that the person entitled to make the election is “the person described in paragraph (3)(A)(ii)”. The “person described in section 45Q(f)(3)(A)(ii)” could be understood in two different ways.

One possible interpretation takes into account *all* words contained in section 45Q(f)(3)(A)(ii). Under this interpretation, the person entitled to make a section 45Q(f)(6) election and to deem carbon capture equipment as having been placed in service *on* February 9, 2018, is the person described in section 45Q(f)(3)(A)(ii) who owns carbon capture equipment originally placed in service *on or after* February 9, 2018. However, that interpretation leads to an impossibility. One cannot elect to have an applicable facility deemed as having been placed in service *on* February 9, 2018 if the requirement is that the facility owned by such person must have already been placed in service *on or after* February 9, 2018. That illogical result must be avoided, and the statute must have another meaning.

The second way of interpreting the “person described in section 45Q(f)(3)(A)(ii)” is to take into account only the description of the person in the second half of section 45Q(f)(3)(A)(ii), without regard to the first phrase in section 45Q(f)(3)(A)(ii). The person who should be able to make the applicable facility election is the person who owns the carbon capture equipment originally placed in service at the qualified facility, period. There should not be a facility-installation-date restriction on the *person* who makes the election, because the *applicable facility itself* already is defined with an appropriate installation-date restriction. The proper interpretation of Section 45Q(f)(6)(A) regarding “the person described in paragraph (3)(A)(ii)” is that such reference simply means “the person that owns the carbon capture equipment and physically or contractually ensures the capture and disposal, utilization or use as a tertiary injectant of such qualified carbon oxide”. As a result, we support the revision to § 1.45Q-2(g)(4) suggested in Exhibit 2.

Comment 21. Definition: 80/20 rule - pipeline. We agree in principle with the 80/20 rule in § 1.45Q-2(g)(5), including the last sentence of the rule that provides the carbon capture equipment owner the option to consider the capital costs of new equipment for a pipeline for purposes of the 80/20 Rule. However, we support three modifications to this provision.

A. Exclusivity requirement imposes immense burden

The pipeline is described as “a pipeline owned and used exclusively by that taxpayer”. The quoted language raises the question of how long the taxpayer must be the owner and exclusive user of the pipeline, and raises the bigger issue of why an exclusivity requirement should be imposed at all. The regulation does not place a limitation on the amount of time that such a pipeline must be owned and used exclusively by that taxpayer. Certainly, the regulation is not intended to mean that the taxpayer, to maintain compliance with the 80/20 Rule, would never be able to sell the pipeline and would never be able to allow a third party to transport carbon oxide on the pipeline. There is no justifiable reason why the pipeline has to be exclusively used by a single taxpayer. In some states, common carrier pipelines have the right of condemnation or eminent domain, but those pipelines by definition must transport products for two or more parties. If the 80/20 rule pipeline cannot be a common carrier pipeline, then the exclusivity requirement imposes a high burden without any recognizable benefit because the pipeline may not even be built. In Exhibit 2, we suggest the exclusivity requirement be eliminated.

B. Carbon capture equipment, not qualified facility

The 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”. Section 45Q does not require the taxpayer to own the qualified facility, but rather only requires ownership of the carbon capture equipment. If the owner of the qualified facility (i.e. power plant) has to own the pipeline, it imposes a requirement that is outside the norm in industry and presents an unreasonable burden without any economic benefit. Our suggested revision appears in Exhibit 2.

C. Eliminate requirement of emission

The limitation that the pipeline must only transport carbon oxide that “would otherwise be emitted into the atmosphere” unfairly prejudices direct air capture facilities without justification or cost/benefit analysis. Direct air capture facilities should be able to enjoy the benefits of this provision in the same way as industrial facilities. This emission requirement should be eliminated as suggested in Exhibit 2.

Comment 22. Definition: 80/20 rule – new components. We support the notion that the “new components of property” can include two categories of property: (a) brand new property that has never been used before, and (b) 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). In the carbon capture industry, some components of property such as CO₂ compressors or dehydration equipment can be interchangeable. For example, CO₂ compressors used at an EOR field for 5 years (and with respect to which no 45Q credit was ever claimed) can be relocated to a carbon capture facility for use as carbon capture equipment. The ability to place in service this type of used-but-new property, but treat it as “new components of property”, could serve to reduce overall costs of carbon capture equipment and thereby allow more of the incentivized carbon oxide sequestration activity to occur. Requiring the 80% portion of the retrofitted facility or equipment to only be brand new equipment, while perhaps a reasonable requirement with respect to an ITC, is not applicable to a PTC-like credit such as 45Q. Section 45Q incentivizes the capture and sequestration activity, not the investment of capital, so the function of the used-but-new property is more important than whether it is brand new. Under our proposal (treating as new those components that were used at some non-45Q location), the value of those used-but-new components of property would still be taken into account in determining the 80% number. Our proposed revision to § 1.45Q-2(g)(5) is shown in Exhibit 2.

Comment 23. Definition: Original planning and design. The definition of qualified facility in Section 45Q(d)(1)(B) contemplates inclusion of facilities that begin construction before January 1, 2024 and “the original planning and design for which includes installation of carbon capture equipment”. “Original planning and design” is not defined.

The final regulations should provide a bright-line standard for what level or degree of planning and design satisfies the statutory requirement. We do not believe that the requirement should only be satisfied if the *final* design includes carbon capture equipment. Congress specifically chose the word “original” planning and design rather than the word “final” planning and design. During the process of designing a facility, a design can be modified multiple times based on various business and technical considerations. The same is true for the construction process, such as when cost overruns can cause portions of projects to be scaled back or eliminated.

A regulation that describes the minimum level of planning and design would be helpful to avoid any potential tax audits on this issue which might occur many years after the “original planning and design”. This issue is important, especially as carbon capture projects will near the beginning of construction

deadline and seek to ensure projects qualify for that deadline. We previously provided a proposed definition for “original planning and design” for purposes of the qualified facility definition. We propose this definition as a new § 1.45Q-2(g)(6), which appears in Exhibit 2.

Comment 24. Definition: Section 43 certifications. We support the final regulations (a) taking into account the definitive EOR-related regulations in § 1.43-3 and therefore limit the proposed regulation in § 1.45Q-2(h)(4) to only natural gas projects, and (b) expressly stating that certifications for enhanced oil projects under Section 43 must be made annually even if no Section 43 credit is being claimed that year.

According to § 1.45Q-2(h)(2) first sentence, the § 1.43-3 certifications are required for qualified enhanced oil or natural gas recovery projects. The second sentence of § 1.45Q-2(h)(2) then explains the certification requirements for *natural gas* projects only. That provision generally requires *natural gas* project certifications to be attached to Form 8933. We presume the reason this requirement in § 1.45Q-2(h)(2) second sentence only applies to *natural gas* projects is because the same certifications for *enhanced oil* projects are already subject to instructions, guidance or regulations related to the Section 43 EOR credit (such as requirements in § 1.43-3(b) and Form 8830). We support this approach.

Despite this appropriate distinction in § 1.45Q-2(h)(2) between *natural gas* projects and *enhanced oil* projects, § 1.45Q-2(h)(4) fails to be limited to only *natural gas* projects and is inappropriately applicable to both types of projects. Timing requirements for a petroleum engineer’s certification for *enhanced oil* projects is already the subject of federal regulations in § 1.43-3(a)(2). However, § 1.45Q-2(h)(4) as proposed would require the petroleum engineer’s certification for *enhanced oil* projects to be submitted twice: once for purposes of the Section 43 EOR credit, and separately attached to a Form 8933 for the Section 45Q credit. We believe this duplicative requirement was an unintentional drafting error. We would support limiting § 1.45Q-2(h)(4) to only *natural gas* projects.

Lastly, we believe the 45Q regulations should make clear that, for purposes of the 45Q credit, the certifications for *enhanced oil* projects under Section 43 must be made as required under Section 43, even if no Section 43 credit is being claimed that year.

Comment 25. Definition: Carbon oxide injected in oil reservoir. We propose that the examples used in § 1.45Q-2(h)(5) be eliminated because they are unnecessary. The regulation at § 1.45Q-2(h)(5) excludes certain carbon oxide from being treated as qualified carbon oxide, disposed of, injected, or utilized. The exclusion applies to carbon oxide that is injected into an oil reservoir that is not a section 43 qualified enhanced oil recovery project (QEOR project). The regulation uses two examples as why an oil reservoir might not qualify as a QEOR project: (1) first injection of a tertiary injectant before 1991, and (2) failure to timely file a petroleum engineer’s certification. The first example is inaccurate, as stated, because it fails to consider the significant expansion exception in § 1.43-2(d). Routinely used in the EOR industry to qualify an oil reservoir as a QEOR, the significant expansion exception treats as a separate project any significant expansion of a project that initially began injection prior to 1991. Inclusion of the 1991-time limitation in § 1.45Q-2(h)(5), without recognition of the § 1.43-2(d) significant expansion exception, creates confusion. The other example is also not necessary in § 1.45Q-2(h)(5). As a result, we suggest the revision contained in Exhibit 2.

Comment 26. Definition: Tertiary injectant. The definition of tertiary injectant in § 1.45Q-2(h)(6) should be significantly modified to eliminate inaccuracies and bring it into compliance with Section 45Q. Section 45Q(e)(3) states that “tertiary injectant” has the same meaning as when that term is used in

26 USC § 193(b)(1). While section 193(b) does not define “tertiary injectant”, the term is used in ways that leads to the following definition that is gleaned from section 193(b):

“Tertiary injectant” means any injectant that is used as part of a tertiary recovery method defined in Section 193(b)(3). Tertiary injectant does not include a hydrocarbon injectant defined in Section 193(b)(2) that is recoverable.

This definition from section 193(b) can then be incorporated into the Section 45Q context, as required by Section 45Q(e)(3). The term tertiary injectant is used 8 times in Section 45Q. Sometimes the term appears in the context of using carbon oxide “as a tertiary injectant in a qualified enhanced oil or natural gas recovery project”, and other times the term appears just “as a tertiary injectant”. As a result, incorporating the Section 193(b) definition of tertiary injectant into Section 45Q requires two simple adjustments.

- First, the term “qualified enhanced oil recovery project” in the gleaned definition can be substituted for the term “tertiary recovery method in Section 193(b)(3)”. This is permissible because a “qualified enhanced oil recovery project” is defined in 26 USC 43(c)(2)(A)(i) to include any project that involves a Section 193(b)(3) tertiary recovery method.
- Second, the Section 43(c)(2) term “qualified enhanced oil recovery project” is expanded to include natural gas, because of the instruction in Section 45Q(e)(2).

As a result of these adjustments, the definition of tertiary injectant for Section 45Q purposes should be:

“Tertiary injectant” means any injectant that is used as part of a qualified enhanced oil or natural gas recovery project. Tertiary injectant does not include a hydrocarbon injectant defined in Section 193(b)(2) that is recoverable.

The definition of tertiary injectant in § 1.45Q-2(h)(6) should be changed to match the above definition. This suggested revision is detailed in Exhibit 2.

The NPRM definition is incorrect for the following reasons:

- A. The proposed regulation definition actually includes 2 definitions, in separate sentences, and the two definitions are substantially different from each other. This confusion should be eliminated by adopting the definition proposed above.
- B. Section 45Q always uses tertiary injectant in the context of qualified carbon oxide being used “as a” tertiary injectant, rather than qualified carbon oxide being “the only” tertiary injectant. Qualified carbon oxide is to be used “as” a tertiary injectant.
- C. The words “disposed of” should have been used instead of the words “stored in”, since Section 45Q always uses the terms “used and disposed of” to describe injection of a tertiary injectant in a qualified enhanced oil or natural gas recovery project.
- D. The term “tertiary injectant” should not be limited to only qualified carbon oxide.
 - (1) Section 45Q(e)(3) defines tertiary injectant to include all tertiary injectants described in Section 193(b), not only carbon oxide. Section 193(b) never limits the term “tertiary injectant” to only be carbon oxide or CO₂.
 - (2) If the statute meant for tertiary injectant to be limited to qualified carbon oxide, it would not have included the words “tertiary injectant” in the statute at all. For example, if the definition of tertiary injectant was intended to be limited to qualified carbon oxide, then the first instance where tertiary injectant appears in the statute (Section 45Q(a)(2)(B)(i)) would have been written this way: “\$10 per metric ton of qualified carbon oxide which is ~~used~~ injected 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”. Congress did not use that approach, and therefore meant for tertiary injectant to be broader than qualified carbon oxide. The definition of the term in the proposed regulations should match the congressional intent.

- (3) The term was defined without full consideration of how the term is used in the regulations. For example, using the NPRM definition in § 1.45Q-2(h)(5) leads to an illogical conclusion: that “qualified carbon oxide” could somehow have been injected into an oil reservoir prior to 1991 even though the concept of “qualified carbon oxide” was not created until 2008 when Section 45Q was enacted by Congress. The term tertiary injectant, when used in § 1.45Q-2(h)(5), is used in a manner much more consistent with our proposed definition.

Comment 27. Secure Geological Storage: Qualified carbon oxide is inherently captured. We support removing the word “captured” from § 1.45Q-3(a). By definition, all qualified carbon oxide is captured carbon oxide. Section 45Q(c)(1)(A)(i), (B)(i), and (C)(i), and §1.45Q-2(a)(1)(i), (2)(i), and (3), all define qualified carbon oxide as carbon oxide that has to be captured, somehow, someway. The concept of “*captured* qualified carbon oxide” is therefore redundant. Using the word “captured” to modify qualified carbon oxide in some contexts in the proposed regulations (i.e. with respect to secure geologic storage), but not using the same adjective to modify qualified carbon oxide in other instances in the set of proposed regulations, could lead to an unintended implication. For example, when § 1.45Q-3(a) uses the term *captured* qualified carbon oxide but § 1.45Q-4(a) does not use the word “captured” to describe qualified carbon oxide, the proposed regulations could inaccurately be interpreted to mean that qualified carbon oxide for utilization purposes does not have to first be captured. That implication is contrary to every portion of Section 45Q. Because all qualified carbon oxide – by definition – must be captured, we propose removing “captured” from § 1.45Q-3(a) and that suggested revision appears in Exhibit 3.²⁹

Comment 28. Secure Geological Storage: Natural gas recovery projects and ISO standard. We support enhanced natural gas recovery projects meeting the secure geological storage requirement through the subpart RR method and not through the ISO standard. The proposed regulations at § 1.45Q-3(b)(1) and (2) presume that both CO₂-EOR and CO₂-EGR projects can be certified under the ISO standard. However, the ISO standard only applies to CO₂-EOR projects. By its own terms, the ISO standard cannot apply to enhanced *natural gas* recovery projects. We propose that the final regulations should return to the Form 8933 requirement that UIC Class II permit holders receive an approved MRV Plan under subpart RR with respect to enhanced *natural gas* recovery projects. Enhanced *natural gas* recovery projects using CO₂ are within the scope of subpart RR. To implement this proposed revision, the words “or natural gas” should be removed from § 1.45Q-3(b)(2) and § 1.45Q-3(d) second sentence. Those suggested revisions appear in Exhibit 3.

Comment 29. Secure Geological Storage: Non-CO₂ carbon oxides. We recognize that both subpart RR and the ISO standard do not apply to any carbon oxide other than CO₂ (carbon monoxide). However, Section 45Q is clear that credits are available for secure geological storage of carbon monoxide. We believe the final regulations should make clear that secure geological storage of carbon monoxide

²⁹ We have not detected other locations in the proposed regulations where the term “captured qualified carbon oxide” was used, but we would suggest the adjective “captured” be removed in all instances of “qualified carbon oxide” in the final regulations.

should only be demonstrated through compliance with subpart RR (as modified for purposes of Section 45Q only), and not through any potential compliance with the ISO standard.

The 2018 amendments to Section 45Q expanded the scope of the 45Q credit to include carbon monoxide. Section 1.45Q-3(b)(1) requires compliance with EPA subpart RR for non-tertiary disposal of qualified carbon *oxide* (which includes carbon monoxide). However, subpart RR only applies to underground injection and storage of carbon *dioxide*, not carbon monoxide. The ISO standard also does not apply to any carbon oxide other than CO₂. As a result, the proposed secure geological storage requirements at § 1.45Q-3(b) are theoretically impossible with respect to qualified carbon oxide that is carbon monoxide.

Our comments in response to Notice 2019-32 identified this issue and suggested a draft regulation.³⁰ While we are currently unaware of any existing or proposed projects involving disposal or injection of carbon monoxide, the regulations should contemplate this possibility. We recommend that, for purposes of section 45Q only, subpart RR be allowed to be used as the methodology of demonstrating secure geologic storage for all non-CO₂ carbon oxide. This would not change EPA's GHGRP subpart RR reporting program, but the mass balance calculations, monitoring and containment assurance requirements could be equally applied to non-CO₂ carbon oxides. Proposed revisions to implement this recommendation are provided in Exhibit 3. While non-CO₂ carbon oxide volumes would not be reported to EPA, we suggest that both non-CO₂ carbon oxide amounts, and carbon dioxide amounts, be separately reported on Form 8933.

Comment 30. Secure Geological Storage: Documentation. The documentation regulation at § 1.45Q-3(c) is confusing as a stand-alone, single sentence requirement and seems incomplete without additional context. For example:

- The regulation does not identify what documentation is required; it just speaks of “documentation” generally without reference to any other proposed regulation.
- The regulation does not identify which taxpayer(s) or other party(ies) must file the documentation.
- Even though the proposed regulation appears in § 1.45Q-3, the regulation on its face is not limited to documentation related to only disposal and injection. A technical reading of § 1.45Q-3(c) could result in applying the requirement not only to § 1.45Q-3(d) but also § 1.45Q-4(c)(2) regarding utilization. But most readers of the 45Q regulations who are focused on utilization would most likely never read anything in § 1.45Q-3.
 - If the intent is to impose this documentation requirement only on the documentation required to be filed by § 1.45Q-3(d), then we would suggest relocating the sentence to the end of § 1.45Q-3(d).
 - If it is intended to impose this documentation requirement on other sections such as utilization, then the regulation should be repeated in § 1.45Q-4 or relocated to another section. We believe this is the intent and therefore suggest relocating the regulation to a new § 1.45Q-1(i) and renumber accordingly. See detailed proposed revisions in Exhibit 1.

Comment 31. Secure Geological Storage: Verification. We support an introductory sentence to § 1.45Q-3(d) to provide that the certifications contained in the proposed regulations are the

³⁰ See 45Q Full Reg Project comments in response to Notice 2019-32, IRS-2019-0026-0026, Page 35 of 81, suggested paragraph (c).

verifications required by the statutory definition of qualified carbon oxide. Section 45Q does not require “certification” of any amount of qualified carbon oxide. Instead, Section 45Q(c)(1) requires qualified carbon oxide to be “*verified* at the point of disposal [and] injection”. A key element of a section 45Q credit is the *verification* of the amount of qualified carbon oxide that was captured. We believe the intent of the proposed regulation in § 1.45Q-3 is that the *certifications* required by NPRM § 1.45Q-3(d) are the *verifications* mandated under Section 45Q(c)(1). We agree with that intent. We also believe that the regulation in § 1.45Q-3(d) should expressly state that the certifications *are* the required verifications. The suggested revisions to § 1.45Q-3(d) appear in Exhibit 3.

Comment 32. Secure Geological Storage: Qualified independent engineer or geologist. We support additional requirements in the final regulations at § 1.45Q-3(d) regarding the ISO standard engineer or geologist to ensure integrity and equivalence with subpart RR. We propose requiring a standard of independence, minimum qualifications, and that the certification be made under penalties of perjury.

The proposed regulations at § 1.45Q-3(d) require the documentation outlined in the ISO standard be provided to a “qualified independent engineer or geologist”, who must then provide certain annual certifications. But no standard of independence or certification is provided in the proposed regulations, nor are any specific qualifications required. We believe the following items should be addressed in the final regulations, and we have suggested these revisions to § 1.45Q-3(d) in Exhibit 3.

- **Independent.** We recommend that the standard of independence for the qualified engineer or geologist should be the same standard of independence for the ‘independent third-party’ described in § 1.45Q-4(c)(2). As a result, the certification under § 1.45Q-3(d) would include an affidavit from the qualified engineer or geologist stating that it is independent from the taxpayer, the electing taxpayer, and the credit claimant.
- **Standard of certification.** We recommend that the qualified independent engineer or geologist make its certification “under penalties of perjury”. This standard of certification is required of petroleum engineers who certify enhanced oil recovery projects under section 43, and we believe the certification required by § 1.45Q-3(d) should be at no lesser standard.
- **Qualified engineer.** We recommend that the qualifications for the independent engineer be the same as the qualifications for the petroleum engineer described in § 1.43-3(a)(1). These two engineers are providing equivalent functions and services and should be held to the same qualification. The § 1.45Q-3(d) engineer should also be a petroleum engineer, because a civil or electrical engineer (for example) is not necessarily qualified to make the required certification. Also the engineer in § 1.45Q-3(d) should be duly registered, certified or licensed as a professional engineer in any State, like the § 1.43-3(a)(1) engineer.
- **Qualified geologist.** We recommend that the qualifications for the independent geologist be similar to those of the qualified engineer in item 3 above. While state registration, certification or licensure of professional geologists is not required in all States, we would suggest the independent geologist be registered, certified or licensed as a professional geologist in a State that is a member of the National Association of State Boards of Geology,³¹ or be designated as a certified professional geologist by the American Institute of Professional Geologists.

Comment 33. Secure Geological Storage: Economic analysis. At 85 Fed. Reg. 34059-60, the NPRM provides an economic analysis of secure geologic storage. Treasury and IRS requested comments on these economic findings. We agree with the Economic Analysis associated with secure geologic storage

³¹ Professional geologist licensure exists in 32 states through a program administered by the National Association of State Boards of Geology (https://asbog.org/state_boards.html).

on 85 Fed. Reg. 34060 regarding the rejection of state programs for the reasons provided (i.e. non-uniform regulations, different reporting requirements, and different governing bodies).

Comment 34. Secure Geological Storage: Public transparency. At 85 Fed. Reg. 34059-60, the NPRM provides an economic analysis of secure geologic storage. Treasury and IRS requested comments on these economic findings. The Economic Analysis accurately identified that the ISO standard lacks the requirement of public reports of the amount of qualified carbon oxide sequestered. We believe this absence of public transparency is detrimental to the ISO standard being an equivalent alternative to subpart RR. The April 15, 2020 letter from the Treasury Inspector General for Tax Administration to Senator Robert Menendez (TIGTA Report)³² has already shown that public transparency is needed in the 45Q program. In response to Notice 2019-32, we advocated that any alternative to subpart RR must be substantially equivalent. The ISO standard sans public transparency is not substantially equivalent to subpart RR.

We support the concept of the ISO initial plan and annual reports being publicly available documents, much like MRV Plans and subpart RR annual reports are public documents. Without this public availability, the ISO standard is not an *equivalent* program to subpart RR. To the extent permissible by law, we would encourage the final regulations to require taxpayers that rely upon the ISO standard for demonstration of secure geological storage to self-publish their initial plan and annual reports.³³ In the alternative, we would encourage the final regulations to require the IRS to publish (a) metric tons claimed per project (not dollar amounts), and (b) methodology of determining the amount of qualified carbon oxide claimed. This alternative would not require the IRS to publish taxpayer names, dollar amounts, tax returns or filings or Forms 8933.

Comment 35. Secure Geological Storage: Secure geological storage site. We support the use of a single term, “secure geological storage site”, to describe the location where secure geological storage occurs. The proposed regulations use different terms to describe the location where secure geological storage occurs. The use of different terms for what appears to be the same meaning, could create confusion and unintended consequences. For example:

- the term “secure geological storage site” is used in § 1.45Q-5(h)
- the term “secure geologic storage facility” is used in § 1.45Q-1(h)(3)(iv)(C) and (v)(D)
- the more general term “storage facility” is used in § 1.45Q-5(i)

The use of the term “facility” separate from the term “site” could imply there must be a difference between the two terms, but no such difference is disclosed in the regulations. The terms “storage facility” and “secure storage site” are both used in the same paragraph in the Summary at 85 Fed. Reg. 34057 third column, fourth paragraph, but the difference between the two is not clear from the context. None of these terms are defined by the regulations. None of these terms appear in the Section 45Q statute.

We believe this potential for confusion should be eliminated. While one possible resolution is for the final regulations to include definitions for each of the above-quoted terms, we believe the better approach is to settle on a single term to describe the location of secure geological storage. We would suggest staying away from the word “facility” since the regulations already include many other facilities

³² See <https://www.law360.com/articles/1269030/attachments/2>.

³³ Perhaps this is similar to the requirement that tax-exempt entities must make Form 990s available to the public upon request.

(i.e. industrial facilities and qualified facilities), and those facilities are (as are most “facilities”) above ground. We would suggest using the term “secure geological storage site” throughout the final regulations. We would also encourage the term to be defined the first time it appears in the regulations, which currently is at § 1.45Q-1(h)(3)(iv)(C) and we suggest this revision in Exhibit 1.

Comment 36. Utilization. We generally support the framework for the utilization portion of the proposed regulations. We believe 45Q utilization simply involves three things: the amount of metric tons of qualified carbon oxide, isolated or displaced through an approved utilization process, to make a product. All issues to be resolved regarding 45Q utilization tie back to one or more elements of this theme.

Comment 37. Utilization: No 45Q credits for gases other than “qualified carbon oxide”. We support a restriction that 45Q credits are only allowed with respect to qualified carbon oxide, and not allowed with respect to any other greenhouse gas. The IRS should not lose sight of the limited scope of gases for which a utilization-based credit is authorized by Section 45Q: the credit is limited to *qualified carbon oxide*. Some commenters may seek to expand the gases for which a Section 45Q credit is available (such as carbon dioxide equivalent (CO₂e) or greenhouse gases such as methane, nitrous oxide, and hydrofluorocarbons). But that attempt would skirt the multiple times that Congress limited the utilization-based credit in Section 45Q to only qualified carbon oxide. For example,

- The text of Section 45Q(f)(5)(A) only applies to “utilization to *qualified carbon oxide*”
- Each of the three utilization process descriptions, Section 45Q(f)(5)(A)(i), (ii) and (iii), are limited to *qualified carbon oxide*
- In Section 45Q(f)(5)(B)(i), the statute limits the gas for which the tax credit is authorized by instructing that “for determining the amount of *qualified carbon oxide*”, that amount is “equal to the amount of metric tons of *qualified carbon oxide* which the taxpayer demonstrates....”
- Section 45Q(f)(5)(B)(II) provides that the displacement approach to utilization is limited to only *qualified carbon oxide* which, by definition, is limited to carbon oxide that has been captured. We support the implementation of this statutory limitation in § 1.45Q-4(b), so that the displacement method of verification remains limited to only *qualified carbon oxide*.

To expand the Section 45Q credit beyond the gas of qualified carbon oxide, one would also have to ignore statutory language in Sections 45Q(a)(2) and (4) which each clearly state that the dollar amount of the credit is based only on the metric tons of *qualified carbon oxide* captured and utilized. We would encourage the IRS to adopt final regulations that clarify that only *qualified carbon oxide* be considered within the narrow scope of gases that are captured and utilized in order to qualify for a 45Q credit. In addition, the IRS should expressly state in the final regulations that no Section 45Q credit can be claimed for reductions of CO₂e emissions, but only for *qualified carbon oxide*. We provide this suggested change in Exhibit 4.

Comment 38. Utilization: Only “captured” carbon oxide can be utilized. In issuing final regulations regarding utilization, we would encourage the IRS to keep in mind the definition of qualified carbon oxide. According to Section 45Q(c)(1) and §1.45Q-2(a), qualified carbon oxide has 3 meanings, depending on when the carbon capture equipment was placed in service and whether the facility is a direct air capture facility. However, all 3 meanings have an important characteristic in common: they all require the carbon oxide to have been *captured*. Because qualified carbon oxide is narrowly defined to

include only *captured* carbon oxide, then the utilization provisions of the statute should also be understood as being limited to utilization processes that use *captured* carbon oxide.³⁴ In other words, if the carbon oxide is not first *captured*, then the carbon oxide does not “count” for utilization purposes. The final regulations should make clear that 45Q credits for a utilization process must use qualified carbon oxide that was first *captured*. It does not matter whether the qualified carbon oxide is disposed of, injected, or utilized, the qualified carbon oxide involved must first be *captured*.

Comment 39. Utilization: Verification in § 1.45Q-4(b) and (c). Section 45Q(f)(5) should be read in conjunction with the definition of qualified carbon oxide in Section 45Q(c). For carbon oxide to be qualified carbon oxide in the utilization context, both measurement at the source of capture and verification at the point of utilization are required.³⁵ However, Section 45Q(f)(5) does not focus on measurement at the source of capture; *it only focuses on verification at the point of utilization*. This narrow focus should be carried into the regulations. The final regulations should be modified to limit the scope of § 1.45Q-4 to only address how the amount of qualified carbon oxide is *verified* at the point of utilization, and not address how that carbon oxide is measured at the source of capture.

In particular, Section 45Q(f)(5)(B)(i) only relates to “determining the amount of qualified carbon oxide *utilized*”.³⁶ That section does not involve measurement for the purpose of determining the amount of qualified carbon oxide *captured*. We believe this distinction should be made explicit in the final regulations for § 1.45Q-4(b) and (c). Those regulations should not be applied to how the qualified carbon oxide is measured at the source of capture.

Every lifecycle analysis (LCA) has boundaries, and the statute in Section 45Q establishes the beginning boundary for when a lifecycle analysis starts for purposes of the 45Q credit. The 45Q utilization LCA only starts after the qualified carbon oxide is captured. It makes sense for the LCA to be limited to the step of verifying how qualified carbon oxide is utilized. One of the purposes of the LCA analysis is to ensure that a utilization process does not emit more carbon oxide than was captured. The LCA analysis is necessary to preclude a claim of 45Q credits when more carbon oxide is emitted through the utilization process than the amount of qualified carbon oxide captured in the first place. For example, the LCA would dictate that 45Q credits cannot be claimed when carbon capture equipment timely placed in service at a qualified facility captures 34,000 metric tons of qualified carbon oxide in a year and that carbon oxide is utilized through an approved utilization process, but 49,000 metric tons of carbon oxide are produced by that utilization process. The utilization process resulted in a net addition of carbon oxide emissions, rather than a net reduction of carbon oxide emissions. Congress wanted to ensure that 45Q credits could not be claimed for attempts at carbon oxide sequestration that resulted in net positive carbon oxide emissions.

Three specific changes to the proposed regulations would be appropriate to implement this understanding.

³⁴ See Conclusion No. 1 in Comment 11.

³⁵ Section 45Q(c)(1)(A)(iii), (B)(iii), and (C)(ii).

³⁶ Section 45Q(f)(5)(B)(i) does *not* start with the words “For purposes of determining the amount of qualified carbon oxide *captured and* utilized by the taxpayer...” Instead, Section 45Q(f)(5)(B)(i) only relates to “determining the amount of qualified carbon oxide *utilized* by the taxpayer...”

A. Heading for § 1.45Q-4(b)

The title or heading of § 1.45Q-4(b) should be changed from “Measurement” to “Amount Utilized”. Section 1.45Q-4(b) is focused solely on determining the amount of the qualified carbon oxide that was utilized. That single change could serve to clear up much confusion regarding utilization verification.

B. Verification-related edits to § 1.45Q-4(c)(2)

The final regulations should reword the beginning of § 1.45Q-4(c)(2) to clarify the distinction between how the qualified carbon oxide is “measured at the source of capture” and how it is “verified at the point of ... utilization”.³⁷ The statute in Section 45Q(f)(5) does not instruct the LCA analysis to be used to determine the amount of qualified carbon oxide that has been *captured*, but only for when it is *utilized*. We would suggest the following change, which also appears in Exhibit 4:

§ 1.45Q-4(c)(2) ~~Measurement~~Verification. The taxpayer ~~measures~~ verifies the amount of qualified carbon oxide ~~captured and~~ utilized through a combination of direct measurement and LCA. ~~The measurement That verification~~ and the written LCA report must be performed by or verified by an independent third-party.

C. Measurement at source of capture in § 1.45Q-2(a)

To further distinguish between measurement at the source of capture, and verification at the point of utilization, it would be helpful for regulations to address both concepts and better delineate that distinction. While the regulations regarding verification appear in § 1.45Q-4, no proposed regulations relate to measurement at the source of capture. Eliminating this gap helps eliminate confusion regarding the scope of the utilization-related regulations. To help answer the question of how qualified carbon oxide is measured at the source of capture (regardless of whether that carbon oxide is disposed of, injected or utilized), it would be helpful to reinstate guidance that addressed that issue. Notice 2009-83 Section 4.03(a) made an important statement: to claim a 45Q credit, not only must the amount of carbon oxide “be measured at the source of capture”, but the amount of qualified carbon oxide is presumed to be the lesser of (a) the amount measured at capture and (b) the amount verified – unless the taxpayer can establish to the satisfaction of the Secretary that the greater amount is the correct amount. Without explanation, these provisions from Notice 2009-83 were not carried over into proposed regulations, and instead were expressly obsoleted in the NPRM.³⁸ These statements should be included in final regulations, and we suggest they be inserted in the definition of qualified carbon oxide at § 1.45Q-2(a). This suggested revision appears in Exhibit 1.

Comment 40. Utilization: Process described in paragraph (a). The phrase “through use of a process described in paragraph (a) of this section” is used in § 1.45Q-4(b)(2) and should also be used in § 1.45Q-4(b)(1). Section 45Q(f)(5)(B)(i) instructs that the statutory phrase “through use of a process described in subparagraph (A)” modifies both Section 45Q(f)(5)(B)(i)(I) and (II). The same should be true in the regulations. This suggested revision to § 1.45Q-4(b)(1) appears in Exhibit 4.

Comment 41. Utilization: Commercial product/market and Section 45Q(f)(5)(A)(iii) determinations. Section 45Q(f)(5)(A) and § 1.45Q-4(a) define “utilization of qualified carbon oxide” as one of three different processes: (1) a photosynthesis/chemosynthesis process, (2) a chemical conversion process, and (3) a process to be determined by the Secretary where the qualified carbon oxide is used for any

³⁷ Section 45Q(c)(1)(A)(iii), (B)(iii), and (C)(ii).

³⁸ 85 Fed. Reg. 34058 first column first sentence.

other purpose for which a commercial market exists, other than CO₂-EOR/EGR (commercial product provision). With respect to the third phrase, the commercial product provision, we believe the IRS final regulations should:

- A. Conclude that the “commercial market” is a market for a product, not a service
- B. Explain the criteria a taxpayer must satisfy to obtain a Section 45Q(f)(5)(A)(iii) determination
- C. By regulation, provide a Section 45Q(f)(5)(A)(iii) determination of “fuels”
- D. Clarify the process by which a taxpayer can obtain a Section 45Q(f)(5)(A)(iii) determination
- E. Adopt a simplified approach to making a Section 45Q(f)(5)(A)(iii) determination

A. Commercial market for a product, not a service

Some may contend that the “use of such qualified carbon oxide for any other purpose” in the commercial product provision should be broadly interpreted to allow the captured carbon oxide to be used as a service rather than as a good or product. There can be instances where carbon oxide is not converted into some product or its properties are not chemically changed into some other product, but rather the gas has certain properties (such as temperature, thermo-dynamic, cryogenic or dense phase properties) that could be useful in some process, and the amount of carbon oxide emitted from the process at the end is the same amount that inserted into the process up front. That is a situation where carbon oxide merely provides a service, and no carbon oxide is physically changed and no carbon oxide is fixated or stored as required in § 1.45Q-4(a)(1) and (2). This is not what the commercial product provision sought to incentivize.

The LCA required for each utilization process, as defined in 45Q(f)(5)(B)(ii) and quoted in §1.45Q-4(c)(1), requires a “full *product* lifecycle” and ends with the “delivery and use of the finished *product* to the ultimate consumer”. Each utilization process must end its LCA analysis with a “finished product” that is consumed, rather than the carbon oxide being used as a service. We believe carbon oxide’s use as a service should not qualify for a 45Q credit, and we believe the statute requires the “commercial market utilization process” to result in the making or production of a product.³⁹ We support the final regulations stating that a product must be the end result of any approved utilization process that uses up or converts the qualified carbon oxide, and we provide a suggested revision in Exhibit 4.

B. Criteria for making Section 45Q(f)(5)(A)(iii) determinations

To make a Section 45Q(f)(5)(A)(iii) determination, the IRS should evaluate multiple criteria. Each of the following criteria is derived directly from Section 45Q(f)(5)(A)(iii). The taxpayer should:

- demonstrate that a commercial market exists for a particular identified product
- explain the product and the market, including potential or actual buyers and sellers
- demonstrate that the particular identified product can be made or produced through a process that uses up qualified carbon oxide, or identify how qualified carbon oxide in particular is used in the process to make or produce the product
- describe how the product is made or produced.

These criteria should be included in § 1.45Q-4(d). The criteria should be applied so that any utilization process approved through a Section 45Q(f)(5)(A)(iii) determination is sufficiently broad to include both (a) processes where the qualified carbon oxide is placed into the product, and (b) processes where the

³⁹ Even under the displacement approach at § 1.45Q-4(b)(2), the utilization process must still use qualified carbon oxide in making the product.

qualified carbon oxide loses its chemical identity and is used up in some way in the process of making the product (i.e. qualified carbon oxide is reacted with another chemical to produce a third chemical). Our suggested additions appear in Exhibit 4.

C. Fuels

We believe that the IRS can make a Section 45Q(f)(5)(A)(iii) determination by regulation, and we believe that “fuels” (in addition to perhaps other products and commercial markets) should be determined by regulation to be a product and commercial market that satisfies the Section 45Q(f)(5)(A)(iii) criteria discussed above.

- (I) First, there is a commercial market for “fuels”. Fuels are used in nearly every mode of transportation in modern society. The fuel product is gasoline, diesel or jet fuel used as a primary input to a combustion engine to generate power that can be harnessed for movement. There are over 270 million motor vehicles in the United States, the vast majority of which use gasoline, and their owners or operators buy over 100 billion gallons of gasoline each year. Over 40 billion gallons of diesel is sold in the United States each year, and over 10 billion gallons of jet fuel is used each year.
- (II) Second, fuels can be made or produced through a process that uses captured carbon oxide, including qualified carbon oxide. Companies have made a fuel using qualified carbon oxide:
 - One example is “air to fuels” such as synthesizing hydrogen and carbon dioxide to make a fuel using a technology that captures qualified carbon oxide through a direct air capture facility and uses the captured CO₂ to synthesize liquid fuels such as gasoline, diesel or jet fuel.
 - Another example is using a gas stream containing carbon monoxide and converting the carbon monoxide into ethanol, a transportation fuel.

“Fuels” should also be approved under Section 45Q(f)(5)(A)(iii) because the statute inherently recognizes fuels as satisfying the criteria. The definition of lifecycle greenhouse gas emissions in Section 45Q(f)(5)(B)(ii) was taken from a statute regarding fuels. That statutory definition instructed the IRS to replace the word “product” for “fuel” in that statute, and the IRS followed that instruction by drafting and proposing § 1.45Q-4(c)(1). “Fuel” should be one of the first products and commercial markets that the IRS should approve under Section 45Q(f)(5)(A)(iii). There is no reason to not include that determination in the final regulations. We provide this revision in § 1.45Q-4(d)(3) in Exhibit 4.

D. Process for Secretary approval of commercial markets/products

The IRS should provide more details about the process a taxpayer would use to obtain a Section 45Q(f)(5)(A)(iii) determination. Questions that should be answered by the final regulations include:

- What format should taxpayers use to submit a request for Section 45Q(f)(5)(A)(iii) determination? Should it be by request for private letter ruling or some other process?
 - We believe the format should be identified in the regulations. We also believe that any taxpayer seeking a Section 45Q(f)(5)(A)(iii) determination should be required to make public their request for determination.
- Upon IRS receipt of a request for Section 45Q(f)(5)(A)(iii) determination, will the determination process be a public process guided by administrative procedures act requirements? Is the approval of a Section 45Q(f)(5)(A)(iii) request a rulemaking or a request for administrative relief that is subject to federal register notice and comment requirements?
- Will a Section 45Q(f)(5)(A)(iii) determination for one taxpayer be considered a Section 45Q(f)(5)(A)(iii) determination for all taxpayers?

- We believe it should. Taxpayers should not have to waste time and effort on seeking a Section 45Q(f)(5)(A)(iii) determination for a product or commercial market for which another taxpayer had already obtained approval.
- Will the IRS make public each of its Section 45Q(f)(5)(A)(iii) determinations?
 - We believe all Section 45Q(f)(5)(A)(iii) determinations should be made public, perhaps by formal notice.
- How quickly will Section 45Q(f)(5)(A)(iii) determinations be made, and would there be any public comment period on any determination application?
 - If there is a public comment period, we believe it should be 30 days unless a longer minimum time period is required by law.
- When a written LCA report is approved, will that particular approval also satisfy the requirements for a Section 45Q(f)(5)(A)(iii) determination, or should the Section 45Q(f)(5)(A)(iii) determination application always be a separate request?
 - We believe a Section 45Q(f)(5)(A)(iii) determination could be accomplished through approval of either the written LCA report or the Section 45Q(f)(5)(A)(iii) request. If the Section 45Q(f)(5)(A)(iii) determination is accomplished through approval of the written LCA report, then the written LCA report should be made public.

We believe each of the above questions should be answered in the final regulations.

E. Simplified approach to making a Section 45Q(f)(5)(A)(iii) determination

We believe that all of the questions and answers listed immediately above can be avoided by the IRS pre-approving all products made or produced using qualified carbon oxide, as long as the taxpayer demonstrates in a statement attached to Form 8933 that there is a commercial market for such products. Accordingly, § 1.45Q-4(a)(3) would be revised as shown in Exhibit 5, footnote 182, and our suggested additions in § 1.45Q-4(d) would not be necessary.

Comment 42. Utilization: Utilization ISO standard. We also generally support that the written LCA report must use documentation prepared consistent with ISO standard 14044:2006. That standard seems to be well understood and accepted in the utilization industry and greenhouse gas emissions marketplace generally. However, we believe the final regulations should be made expressly clear that the results of the LCA for 45Q purposes are unique compared to how the standard might be used in other contexts: utilization in 45Q is only concerned with the amount of captured *carbon oxides* utilized through the utilization process, because Section 45Q tax credits are not available to be claimed for emission reductions of any gases other than carbon oxides. An additional sentence is proposed to § 1.45Q-4(c)(2) in Exhibit 4.

Comment 43. Utilization: Utilization independent third party. The independent third-party requirement in § 1.45Q-4(c)(2) seems reasonable, but 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 ISO 27916:2019 standard (see § 1.45Q-3(d) and Comment 32. above regarding that proposed regulation). At a minimum, both the independent certifier in § 1.45Q-3(d) and the independent third-party in § 1.45Q-4(c)(2) should provide the respective certification or verification under penalties of perjury.

Comment 44. Utilization: Written LCA report. We support that the LCA must be in a written report and must be performed or verified by a qualified independent third party. We believe the applicant for approval of a written LCA report should be required to make public their application and the written LCA report for which they seek approval. We also believe that the applicant, upon receipt of IRS approval of

the written LCA report, should be required to make public the written LCA report that was approved by the IRS. Transparency of utilization processes and LCA methodologies increases integrity and credibility to the 45Q credit program. These requirements should be included in §1.45Q-4(c)(4), subject to appropriate restrictions on disclosure of confidential business information.

We also support separate regulations regarding the submission of the written LCA report, and approval of the written LCA report. We recognize that § 1.45Q-4(c)(4) is “reserved” for “Submission of the LCA”, but we propose that “Submission of the LCA” actually appear in § 1.45Q-4(c)(3) and “Approval of the LCA” be moved to § 1.45Q-4(c)(4). Those suggested revisions appear in Exhibit 4.

Comment 45. Utilization: Lifecycle greenhouse gas emissions. Section 1.45Q-4(c)(1) provides the definition of lifecycle greenhouse gas emissions required by Section 45Q(f)(5)(B)(ii), and the defined term requires consideration of all direct and significant indirect emissions of all greenhouse gases related to the full lifecycle of the product that is made or produced through the utilization process. The definition requires the mass values of those gases to be adjusted per EPA regulation. These provisions must be read in the context of the entire Section 45Q statutory framework because 45Q credits are only for qualified carbon oxides. We agree with the following statement in the NPRM Summary:

“Although the section 45Q credit is only available with respect to qualified carbon oxides, all greenhouse gas emissions are taken into account under this analysis.”⁴⁰

It would be helpful for the final regulations to include examples of how an “all-greenhouse-gas LCA” works in connection with the “only carbon oxides” tax credit. We provide some examples in § 1.45Q-4(c)(5) in Exhibit 4 to help explain how the greenhouse gas emissions are taken into account under the lifecycle analysis, while still staying true to the unmistakably clear mandate from Congress that a section 45Q credit is only available for qualified carbon oxides.

Comment 46. Utilization: Documentation. We support including a documentation regulation in § 1.45Q-4 that supplements the general reporting regulation we are suggesting in new § 1.45Q-1(i).⁴¹ The specific documentation regulation in § 1.45Q-4 would require the amount of qualified carbon oxide utilized to be documented on Form 8933, along with a statement of the date and number of any approval of (a) Section 45Q(f)(5)(A)(iii) determination, and (b) a written LCA report. Our suggested revisions for this new § 1.45Q-4(f) appear in Exhibit 4.

Comment 47. Recapture. We generally support the framework for the recapture portion of the proposed regulations.

Comment 48. Recapture: No recapture unless leaked amount exceeds disposal/injection amount. We support the approach that a recapture event is not triggered unless, for a given year, the leaked amount exceeds the amount disposed of or injected that same year.

Comment 49. Recapture: One-year recapture period. We support that the recapture period is not open-ended. However, we believe the period in § 1.45Q-5(f) should be 1 year rather than 5 years, both for the post-credit-claiming period and the lookback period.

⁴⁰ Summary, 85 Fed. Reg. 34056, third column, second sentence from the bottom.

⁴¹ See page 55.

We propose this change for the following reasons:

- A. No technical/geological reason for more than a 1-year period
- B. Performance of geological storage to date supports a short period
- C. A long period suggests that EPA UIC permitting and MRV plan approval processes are suspect
- D. A long period is not justified under cost/benefit analysis
- E. A shorter period substantially reduces private expenditures
- F. "Most commenters" did not support a recapture period of 3-5 years
- G. A long period ignores fundamental differences between ITCs and PTCs
- H. At a minimum, a shorter period of recapture should be provided for self-reporting

Each of these eight points is addressed below, and our suggested revision to § 1.45Q-5(f) appears in Exhibit 5.

A. No technical/geological reason for more than a 1-year period

For over 15 years, the carbon capture industry has considered storage security to be of minimal concern for properly selected and managed storage locations, with a high percentage of CO₂ retained in the formation. Fifteen years ago, the IPCC determined that the technical possibilities of leakage are so slim that less than 1% of amounts disposed of or injected would ever leak:

*"Will physical leakage of stored CO₂ compromise CCS as a climate change mitigation option? Observations from engineered and natural analogues as well as models suggest that the fraction retained in appropriately selected and managed geological reservoirs is very likely to exceed 99% over 10 years and is likely to exceed 99% over 1000 years. For well-selected, designed and managed geological storage sites, the vast majority of the CO₂ will gradually be immobilized by various trapping mechanisms and, in that case, could be retained for up to millions of years."*⁴²

Even if there was a leak of 1% per year of the amount of qualified carbon oxide disposed of or injected during the 12-year credit period, that amount would never trigger a recapture event under a 1-year period. The IPCC conclusion certainly does not provide any support for a 5-year period.

The Carbon Capture Coalition has provided recapture recommendations based on scientific and technical aspects of geologic storage at scale. The Coalition's technical report and bibliography, written and reviewed by leading experts in subsurface geologic storage of carbon dioxide, explained various aspects of physics and flow mechanics, experience with and tools for subsurface management of buoyant fluids, and numerous regulatory requirements. The report concluded that it was highly improbable that any potential leak would approach the amount of CO₂ injected at a commercial-sized injection project over multiple years. A substantially shorter lookback period and post-credit-claiming period should be employed in the final regulations. We believe looking to the immediately preceding taxable year will sufficiently provide the necessary safeguard against the release to the atmosphere of qualified carbon oxide disposed of or injected.

⁴² Intergovernmental Panel on Climate Change (IPCC) Special Report, *Carbon Dioxide Capture and Storage: Summary for Policymakers* at 14 (2005), available at https://archive.ipcc.ch/pdf/special-reports/srccs/srccs_summaryforpolicymakers.pdf (defining "very likely" as a 90-99% probability, and "likely" as a 66-90% probability).

B. Performance of geologic storage of carbon oxides

A one-year period is also supported by the historic performance of secure geologic storage of CO₂ in the United States.

Section 45Q is not a new tax credit but was adopted in 2008. During the past 12 years of 45Q-incentivized activity, there has not been a single instance where a project has leaked more qualified carbon oxide than what was disposed of or injected in that taxable year. Applying the proposed regulations to the past 12 years of 45Q-related experience, a “recapture event” never occurred. This history includes both CO₂-EOR injection projects as well as disposal projects. The proposed regulations’ adoption of a 5-year period ignores the track record of the participants in the 45Q tax credit program.

In addition, the capture of anthropogenic CO₂ and injection underground as a tertiary injectant has been ongoing in the United State for over 50 years. During that half-century, over 1 billion metric tons of CO₂ have been used as a tertiary injectant. The performance of CO₂-EOR operations has been outstanding from a lack of leakage standpoint. There has never been a project that had a significant leak of injected CO₂, let alone a project that had a leak of an amount that exceeded the amount injected that year in that project. The National Energy Technology Laboratory in 2019 outlined several case studies on the potential of CO₂ leakage from underground carbon storage. The NETL report states that injection of CO₂ for EOR purposes “has demonstrated that large volumes of gas can be stored safely underground and over long timeframes when the appropriate best-practices are implemented.”⁴³ According to the report, “Despite over 40 years of operating CO₂-EOR projects, leakage events have rarely been reported.”⁴⁴ Among the case studies reviewed, the case study with the greatest percentage leakage said “CO₂ leakage accounts for less than 0.01 percent of the total annual injected CO₂ volume”.⁴⁵ In the words of the proposed regulations, no “recapture event” has ever occurred in the CO₂-EOR industry. It is unreasonable to have a 5-year recapture period when a 1-year period would more than suffice for all CO₂ injection activities over the last 50 years.

C. EPA UIC permitting process and MRV approval process

The adoption of a 5-year period (instead of a 1-year period) tends to suggest that the IRS and Treasury perceive that the EPA’s UIC program and permitting process is suspect. All CO₂ injected in the United States must be injected pursuant to a permit under the UIC Program under the EPA USDW Program. In addition, sound engineering and geologic consideration must be given to the injection site prior to obtaining EPA approval of an MRV Plan or certification by an independent engineer or geologist under an ANSI/ISO-standard based approach to secure geologic storage. By adopting a long recapture period, the proposed regulations presume that the EPA would grant disposal and injection permits for sites that are inappropriate for their intended use, and that multiple years’ worth of injected CO₂ will leak from the permitted reservoirs and formations. The proposed regulations also presume that the EPA (or the delegates of their authority) will not exercise their enforcement and compliance mechanisms to preclude continuation of leaks from wellbores once they occur. The EPA permitting process, the MRV Plan approval process, and the compliance methods, are much more robust than that.

⁴³ NETL, *CO₂ Leakage During EOR Operations – Analog Studies to Geological Storage of CO₂*, DOE/NETL-2017/1865 (January 30, 2019), at 104 (https://www.netl.doe.gov/projects/files/CO2LeakageDuringEOROperationsAnalogStudiestoGeologicStorageofCO2_013019.pdf) (NETL).

⁴⁴ NETL at 110.

⁴⁵ NETL at 107.

The EPA has decades of experience with permitting CO₂ injection wells. The IRS should ask the EPA for evidence of any instance of massive leakage of CO₂ encountered in the UIC program. For example, if the EPA reviewed their records of all CO₂ injection permits under Class II or Class VI, and then applied the “recapture event” definition to all of those permits, we believe the results of such a review would indicate that there has never been a situation of leakage that would have ever triggered the recapture provisions in the proposed regulations. Without evidence that historical CO₂ leakage would have triggered the equivalent of a 1-year recapture period, there is no justification for any longer period.

D. Cost-benefit analysis

A long recapture period is not justified under any reasonable cost-benefit analysis. We understand that Executive Order 12866 requires agencies to justify their regulations according to costs and benefits. We also understand Executive Order 13563 requires agencies to quantify anticipated costs and benefits of proposed rulemakings as accurately as possible using the best available techniques, and to ensure that any scientific and technological information or processes used to support their regulatory actions are objective.

With respect to benefits, we have demonstrated in Sections A, B and C above that there are no incremental benefits of having a 5-year period over a 1-year period. There is no geological or technical reason for a longer period. The performance of 45Q-related projects over the past 12 years and the entire 50-year history of CO₂-EOR projects in the United States also show no benefits achieved with longer than a 1-year period. The EPA UIC program and MRV Plan approval process also demonstrate no need for a longer period.

With respect to costs, however, the expense associated with the longer period is quite substantial. As the regulations indicate, third-party recapture insurance may be available to protect against recapture risks. The only available recapture insurance for tax credits in the market is purchased up-front in the timeline of a project, with a single lump sum premium. As a result, the acquired insurance must encompass the sum of all possible time recapture periods. In other words, the single insurance policy takes into consideration all 5-year recapture periods, for a grand total of 17 years of possible recapture exposure (12 years of credit, plus 5 years of post-credit-claiming period). There is currently no market for recapture insurance for such a time period. While the insurance market could potentially adjust in the future, the proposed regulations did not address these issues and did not attempt to determine the costs associated with different recapture periods. However, it is inherently true that the longer the recapture period, the more costly the insurance premium. We submit that increased cost is not justified because there are no benefits to be gained by such a great expense.

The discussion at 85 Fed. Reg. 34060-61 regarding recapture did not address any alternative recapture period that was shorter than 5 years. Such a failure means the analysis was incomplete, and did not comply with the executive orders.

E. Shorter period substantially reduces private expenditures

Treasury is required to “manage the costs associated with the governmental imposition of private expenditures required to comply with Federal regulations” (Executive Order 13371). Compliance with the proposed recapture regulations requires private expenditures, but the imposition of a 5-year period does nothing to manage those costs. However, by shortening the recapture period to 1-year, Treasury would be taking steps to fulfill its executive order obligations to reduce costs of new 45Q regulations (i.e. recapture insurance costs would be reduced), while still maintaining public confidence and safeguarding the environmental integrity and geologic storage objectives of the program.

F. “Most commenters”

At 85 Fed. Reg. 34060 third column, first paragraph, last sentence, the following statement is made: “Most commenters supported a lookback period of three to five years.” We believe this needs further study. We have analyzed the 116 comments provided to the IRS in response to Notice 2019-32, and our analysis reveals the following:

Recommendation	Comments in Docket IRS-2019-0026	Total
1-year recapture period	0019 (Tate & Lyle); 0020 (Mobley); 0021 (Southwestern Oil); 0026 (45Q Full Reg Project = 8 members); 0030 (Jimenez); 0032 (NRG); 0053 (Carbon Capture Coalition = 60+ members); 0068 (Clean Energy Systems); 0081 (Corn Refiners = 5 members); 0093 (Byker)	80+
2-year recapture period (but no recapture period if Class 6 well)	0028 (CURC = 33 members)	33
3-year recapture period	0014 (McDermott “several clients”); 0024 (Hunton); 0033 (Red Trail); 0044 (Glenrock); 0055 (BP); 0092 (Energy Advance Center = 8 members); 0096 (Univ of Houston); 0097 (Gallagher)	15+
5-year recapture period	none	0

Of the comments submitted in response to Notice 2019-32 that addressed the issue of recapture period length, it appears a majority of commenters suggested a 1-year recapture period. More comments suggested a 2-year recapture period over a 3-year period. We could not find a single commenter that suggested a 5-year recapture period. We join the vast majority who request a 1-year recapture period.

G. PTC vs ITC

We acknowledge that many investment tax credits (ITCs) have a 5-year lookback period for recapture of those credits, with a requirement that effectively vests 20% of the credits each year over the 5-year period. Because of the inherent nature of such an *investment* tax credit, which seeks to incentivize a long-term investment in a certain type of property, it is reasonable to accept that the recapture period would similarly be a long time period to ensure the investment stays invested in that property.

However, unlike an ITC, section 45Q is more like a production tax credit (PTC) because it incentivizes an ongoing activity rather than a single, up-front investment. The recapture period for PTCs should inherently be shorter than an ITC, because the full amount of the 45Q credit is awarded over time rather than 100% up-front like ITCs.

H. Shorter period of recapture should be provided for self-reporting

At a minimum, a shorter period of recapture should be considered for self-reporting, to encourage self-reporting of recapture events.

Comment 50. Recapture: Recapture amount accounted for in year of leak. We generally support that any recapture amount is accounted for in the taxable year of the leak, rather than requiring amended returns for prior years.

Comment 51. Recapture: Recapture period beginning date. We support a change in § 1.45Q-5(f) so that the recapture period begins no earlier than the date for which a section 45Q credit was claimed. In some instances, such as CO₂-EOR projects, the activity of injecting qualified carbon oxide began before Section 45Q was enacted or was amended in 2018. The regulation in § 1.45Q-5(f), as proposed, could be interpreted to start a potential recapture period on the date of first disposal or injection – regardless of whether a 45Q credit was claimed for those amounts disposed of or injected. The recapture period should not be so broad as to include years of disposal or injection of qualified carbon oxide prior to the beginning of the 12-year credit period. The statute authorizing recapture (Section 45Q(f)(4)), provides only one purpose: to recapture the benefit of an allowed 45Q credit. As a result, the recapture period should be limited to only those years in which a 45Q credit was claimed. If the proposed revision is not adopted, the recapture period for qualified carbon oxide captured at applicable facilities (for example) would improperly begin prior to the first claim of section 45Q credits. There is no justifiable reason why the recapture period for some projects should begin earlier than other projects, when all projects should begin no earlier than the date of first claim of section 45Q credits. We suggest revisions to § 1.45Q-5(f) in Exhibit 5 to address this issue.

Comment 52. Recapture: Force majeure exception. We support that recapture should not occur in the event of a loss such as terrorism or earthquake, but additional clarity is needed on the § 1.45Q-5(i) exceptions. The force majeure exception in § 1.45Q-5(i) should be expanded to cover additional uncontrollable casualties (i.e. losses over which the owner of the storage facility lacks control), and that additional examples should be provided.

In Notice 2011-24 Section 3.03, the IRS defined the amount of a Section 48A or 48B project's total CO₂ emissions by requiring the amount to be measured on an annual basis during "normal plant operations". The term "normal plant operations" was then defined to exclude certain interruptions "*resulting from an event of force majeure (including an act of God, war, strike or other similar event beyond the control of the taxpayer).*" Normal disposal and injection operations should also exclude these same interruptions. We believe the quoted language should be used in § 1.45Q-5(i) to clarify the instances in which a recapture event is not triggered.

Comment 53. Recapture: LIFO approach. We support the LIFO approach for putting a credit value on the leaked amount of qualified carbon oxide. While this results in recapture of highest-valued tax credits first, there is no practical way to determine that any particular leaked amount was disposed of or injected in any particular year so as to be able to use the credit value for such particular year.

Comment 54. Recapture: Limited remedial action and cure period. A cure period opportunity should be provided, at the option of the taxpayer during the post-credit-claiming period, to remediate the recapture exposure by performing incentivized disposal or injection activity. Because the 45Q credit is an activity-based credit, there should be afforded an opportunity to perform the disposal or injection activity to eliminate the recapture exposure during the post-credit-claiming period. Tax equity insurance is often a credit support to the injection operator's indemnification obligation to its tax equity partner. The regulations appropriately recognize that tax insurance may be available for these projects, but the regulations ignore that the insurance often lays behind the operator's indemnification obligation. The operator should have the opportunity to perform the incentivized activity as a means of satisfying that contractual indemnification obligation. This opportunity would be the chance to dispose of or inject metric tons of qualified carbon oxide in secure geologic storage during the post-credit-claiming period, not claim a 45Q credit for those metric tons, but instead subtract those metric tons from the quantity of recaptured qualified carbon oxide described in § 1.45Q-5(d). 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 solve a recapture event, and to solve it in such a way that results in greater amounts of ultimate disposal and injection. Without this opportunity to cure, the insurance transaction simply keeps the tax equity partner whole and eliminates a portion of the activity that the tax credit was designed to incentivize.

The opportunity for remedial action during a cure time period is not foreign to IRS tax credits. In implementing 26 USC Section 42, the IRS and Treasury affords the taxpayer receiving the tax credit with the opportunity to avoid recapture of the tax credit, if the taxpayer brings into compliance the incentivized project activity. IRS and Treasury should extend this same opportunity to Section 45Q taxpayers. Under 45Q, the operator of the secure geologic storage site could dispose of or inject amounts of qualified carbon oxide during the post-credit-claiming period in a manner to offset any leaked amounts of qualified carbon oxide.

Comment 55. Recapture: Using “disposed of” and “injected” consistently with other 45Q regulations. The terms “disposed of” and “injected” should be used in § 1.45Q-5 consistently with the other sections of the proposed regulations. The quoted terms are defined in § 1.45Q-1(a). The recapture regulations should use the defined term “injected” instead of the phrase “used as a tertiary injectant”. This distinction makes a difference. As § 1.45Q-1(a) makes clear, “injected” qualified carbon oxide is both “used as a tertiary injectant” and “disposed of in secure geologic storage”. While “used as a tertiary injectant” appears in Section 45Q(f)(4), that statutory paragraph actually says “used as a tertiary injectant in a manner consistent with the requirements of this section”. Employing the word “injected” throughout § 1.45Q-5 is consistent with all of the other provisions in Section 45Q statute and maintains unity of defined terms throughout all 5 sections of a complicated set of regulations.

Comment 56. Recapture: “Has leaked to the atmosphere”. We support that the type of leak that would trigger a recapture event is only qualified carbon oxide that has leaked to the atmosphere. The language used in some examples should be modified to match the regulations at § 1.45Q-5(c) which appropriately implement this statutory requirement that recapture can only occur if the qualified carbon oxide “has leaked to the atmosphere”. Some examples in § 1.45Q-5(g)(6) improperly use the phrase “will eventually migrate to the atmosphere” in an effort to describe when there is a leaked amount of qualified carbon oxide. The two quoted phrases do not have the same meaning. The latter implies that CO₂ would eventually, someday, perhaps 100 years from now, migrate to the atmosphere. The statute is clear that such a future event does not trigger recapture. The earliest that recapture could ever be triggered, according to the statute, is upon an actual release or leak of qualified carbon oxide. Section 1.45Q-5(c) correctly describes recapture as when qualified carbon oxide “has leaked to the atmosphere”, because this phrase uses the past tense to describe that CO₂ has indeed leaked to the atmosphere. The language used in the examples in § 1.45Q-5(g)(6) needs to be consistent with the language in the regulation.⁴⁶

⁴⁶ This is consistent with the instruction in Section 45Q(f)(2) that the IRS adopt regulations for determining adequate security measures for geological storage of qualified carbon oxide such that the qualified carbon oxide does not escape into the atmosphere. This creates a key distinction: qualified carbon oxide is that which has been captured and disposed of or injected and either (1) remains disposed of or injected, or (2) has been released to the atmosphere. There is no third category. Recapture applies only if the latter occurs; as long as the former status remains then no recapture analysis is required. The regulations at § 1.45Q-5(c) appropriately implement a requirement that recapture only could occur if the qualified carbon oxide “has leaked to the atmosphere”. The examples should use the same terminology.

Comment 57. Applicability dates. The proposed regulations,⁴⁷ as well as the “Proposed Effective/Applicability Date” at 85 Fed. Reg. 34058, state that taxpayers may choose to apply the regulations under certain conditions “for taxable years beginning on or after February 9, 2018”. We believe the selected date of February 9, 2018 is incorrect. The proposed regulation means that for those taxpayers whose tax year is a calendar year, the earliest that the proposed regulations can be applied is not calendar year 2018 but rather calendar year 2019 (since the 2018 tax year began for them on January 1, 2018, after the effective date of the proposed regulations).

We believe the date should be December 31, 2017. The Bipartisan Budget Act of 2018 at section 41119(a) amended the Section 45Q statute. However, section 41119(b) of that act provided the effective date of the amendments:

(b) EFFECTIVE DATE.—The amendment made by this section shall apply to taxable years beginning after December 31, 2017.

The proposed regulations ignore this effective date.

While the date of enactment of the Act is February 9, 2018, the Act of Congress stated that the amendments to Section 45Q are applicable to tax years 2018 and beyond. The proposed regulations as drafted are inapplicable to tax year 2018 for most taxpayers, even though the intent of Congress is to apply the 45Q updates to tax year 2018. There is no reason to exclude tax year 2018 from the tax years in which the proposed regulations may apply. We previously suggested that the regulations be effective for taxable years beginning after December 31, 2017.⁴⁸ We support the final regulations being applicable “for taxable years beginning after December 31, 2017”, consistent with the Act of Congress, and our suggested revisions for the effective date appear on the last page of each of the Exhibits. We also believe a taxpayer should be allowed to choose to apply the final regulations on or after December 31, 2017.

Comment 58. Old pool of 45Q credits. We believe the final 45Q regulations should provide that credits claimed but disallowed will not be taken into account in determining whether the 75,000,000 metric ton limit has been reached.

Generally, Section 45Q(g) sunsets the availability of the pre-2018 values of the carbon sequestration credit (old pool credits) at the end of the calendar year in which a total of 75,000,000 metric tons of qualified carbon oxide have been taken into account under Section 45Q(a)(1) and (2). The NPRM implements Section 45Q(g) by obsoleting Sections 6 through 9 of Notice 2009-83 on the sunset date,⁴⁹ and by adopting § 1.45Q-1(f) in an attempt to implement Section 45Q(g). While we generally agree with § 1.45Q-1(f) (with one minor suggestion indicated below), the regulations regarding the old pool credits fail to address the implications of the TIGTA Report.⁵⁰ We believe the regulations should specifically explain that claimed “old pool” credits which have now been disallowed by the IRS should not be included in the count-up to the 75,000,000 metric ton limit. The IRS is currently taking a different approach and is improperly considering the disallowed old pool credit claims in determining the aggregate amount of credits claimed under the old pool. This is fundamentally unfair to taxpayers who

⁴⁷ §§1.45Q-1(i), 2(j), 3(f), 4(f) and 5(j).

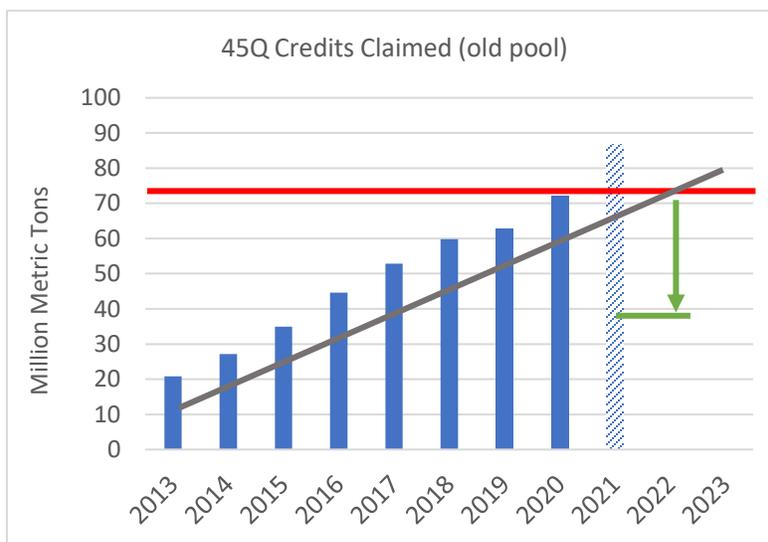
⁴⁸ See 45Q Full Reg Project submission in response to Notice 2019-32, IRS-2019-0026-0026, on page 81 of 81.

⁴⁹ 85 Fed. Reg. 34058, first column, first paragraph.

⁵⁰ See Comment 34.

are claiming credits under the old pool, and it is contrary to the incentive that Congress implemented when it established the 45Q program.

The IRS annually publishes the aggregate amount of qualified carbon oxide taken into account under the old pool. Those annual notices are depicted below.



The 75 million metric ton limit is shown in red. The most recent annual notice showed an increase of more than 9 million metric tons.⁵¹ The grey line shows a steady increase in the annually reported amount of old pool credits that have been claimed, with an average increase of about 7 million metric tons claimed per year. The TIGTA Report indicated the IRS has disallowed claims of approximately \$531 million, which we believe accounts for over 30 million metric tons of old pool credits. If the disallowed claims were removed from consideration, as we proposed, the annual notice would have reported claims of about 42 million metric tons, which is depicted by the green line. It is clear from the graph that the disallowed claims are still being considered as having been claimed.

The 45Q incentive is designed for the purpose of capturing and storing qualified carbon oxide. When Section 45Q was originally enacted, Congress established a 75 million metric ton maximum to place an aggregate limit on the amount of money the government wanted to “spend” on this program. As old pool credits are claimed, the government incentive is awarded and the remaining amount of credits available in the pool is reduced. When those credit claims are disallowed, the IRS ensures the government incentive is not awarded. But just because one taxpayer improperly claimed an old pool credit, that action should not preclude another taxpayer from rightfully claiming a credit that otherwise would have been available in the old pool.

Congress, through Section 45Q(g), did not say that counting to 75 million metric tons should be done by counting credits that *merely* have been claimed. Instead, Congress in Section 45Q(g) said that the IRS should consider only qualified carbon oxide that has been taken into account in accordance with Section 45Q(a)(1) and (2). Those paragraphs refer to credits that have been *claimed and allowed* under the pre-2018 amendment credit values. As a result, only credits that have been claimed and not

⁵¹ Compare Notice 2020-40 to Notice 2019-31.

disallowed should be considered in determining whether the 75 million metric ton limit has been reached.

The 45Q Full Reg Project anticipated this issue in the summer of 2019 when we submitted our comments in response to Notice 2019-32. We believed that the amount of credits involved would cause the old pool credits to expire prematurely, which would unfairly preclude claims in the old pool by taxpayers who otherwise would be entitled to claim old pool credits. The proposed regulations neglected to address this issue, which is now clearly a subject that should be addressed in the regulations. In Exhibit 1, we suggest some specific revisions to § 1.45Q-1(f) to address this matter.

Comment 59. Start of 12-year credit period. When the 12-year credit period begins is an important consideration for all qualified facilities. For carbon oxide to be qualified carbon oxide, not only does carbon capture equipment have to be placed in service at a qualified facility, but also operations of the utilization process or the secure geological storage site must have also commenced. By definition, “qualified carbon oxide” includes and requires disposal, injection or utilization. Without disposal, injection or utilization operations, the carbon oxide cannot be qualified carbon oxide. This is important when considering the beginning and end of the 12-year credit period.

The 12-year period described in the proposed regulations appears to presume what we call the “Sequestration Plan”⁵² is obtained *prior to* the carbon capture equipment being placed in service. We believe this is a misconception and is inconsistent with other provisions in the statute. Since qualified carbon oxide, by definition, requires both capture and one of disposal, injection or utilization, we believe the 12-year credit period for qualified carbon oxide cannot start until both (a) placement in service of the carbon capture equipment, and (b) the disposal, injection or utilization operations have begun and the Sequestration Plan is approved. The final regulations should expressly clarify this start of the 12-year credit period.⁵³

Starting the 12-year clock on the date the carbon capture equipment is operational, and ignoring the date of the Sequestration Plan, is not consistent with the definition of qualified carbon oxide. There can be no “qualified carbon oxide” unless the utilization process equipment or the secure geological storage site is operational with a Sequestration Plan in place. And there can be no start to the 12-year clock unless there is “qualified carbon oxide”. This understanding of when the 12-year credit period begins should be made clear in § 1.45Q-1(c), and we suggest this revision in Exhibit 1.

Our revision also clarifies the issue in the context of an applicable facility. The proposed regulations could be read to mean that the 12-year period with respect to an applicable facility begins on February 9, 2018 – regardless of when the Sequestration Plan is obtained. But terms defined in the statute require a different conclusion. By definition, an applicable facility is a qualified facility.⁵⁴ By

⁵² For purposes of our comments, we define the Sequestration Plan as collectively including (a) the written LCA plan for utilization as approved by the IRS and (b) the MRV Plan under subpart RR for secure geologic storage as approved by the EPA.

⁵³ For example, if a Sequestration Plan associated with the applicable facility is not obtained until February 8, 2021, the possible interpretation would render unavailable the first, second and third years of 45Q credits for that applicable facility. This is contrary to the statutory intent, which is to make available a 12-year credit for every qualified facility. We support the final regulations expressly stating that the start of the 12-year period is the later of the placement in service date of the carbon capture equipment, or the institution or approval of the Sequestration Plan.

⁵⁴ § 1.45Q-2(g)(4)(i) and Section 45Q(f)(6)(B).

definition, a qualified facility must capture minimum amounts of “qualified carbon oxide”.⁵⁵ By definition, carbon oxide is not qualified carbon oxide unless it is disposed of, injected or utilized.⁵⁶ Disposal, injection and utilization is only authorized with a Sequestration Plan. As a result, a facility only becomes an applicable facility if the carbon oxide captured at the applicable facility is also being disposed of, injected or utilized with an approved Sequestration Plan. Consequently, because of the qualified carbon oxide definition, a 12-year time period should not begin with respect to an applicable facility until the disposal, injection or utilization operations are active and a Sequestration Plan is in place. So, for applicable facilities that capture qualified carbon oxide that is disposed of or injected, the 12-year credit period should not begin until the later of (a) February 9, 2018 and (b) the MRV Plan approval date or the ISO certification date.⁵⁷ This conclusion should be expressly stated in the final regulations.⁵⁸

Comment 60. BBA partnership. The term “BBA partnership” is defined in § 1.45Q-1(h)(3)(ii), but the term first appears in the regulations at § 1.45Q-1(h)(1)(iii). We recommended the term be defined the first time it appears in the regulations, and this change is suggested in Exhibit 1.

Comment 61. Coordination of final regulations and Beginning of Construction (Notice 2020-12). We support the harmonization of definitions between the final regulations and the beginning of construction guidance. The definitions in Notice 2020-12 are slightly different than the definitions in the proposed regulations. For example, fuel cells are included in the industrial facility definition in the proposed regulations, but are not included in Notice 2020-12. Similarly, carbon capture equipment is defined in a more expansive manner in the proposed regulations than in the Notice 2020-12. On the other hand, CO₂ production wells are more narrowly defined in the proposed regulations.

We support the harmonization of those definitions to the fullest extent possible. Our suggestions for clarifications appear in Exhibit 2.

This difference in definitions between Notice 2020-12 and the proposed regulations presents a number of issues:

- Harmonizing the different definitions involves important decisions, such as whether to adopt the proposed regulation definition instead of the Notice definition, or whether to adopt the Notice definition instead of the proposed regulations, or whether to modify both.

⁵⁵ § 1.45Q-2(g)(1) and Section 45Q(d)(2).

⁵⁶ § 1.45Q-2(a)(1)(iii), (2)(iii) and (3)(ii), and Section 45Q(c)(1)(A)(iii), (B)(iii), and (C)(ii).

⁵⁷ Because the proposed regulations providing the ISO Standard for demonstrating secure geologic storage were not issued until June 2, 2020 (over 27 months after the applicable facility statute was enacted), taxpayers relying on the ISO standard with respect to qualified carbon oxide captured at an applicable facility will have unfairly lost over 2 years’ worth of 45Q tax credit value if the statute is interpreted to start the 12-year clock on February 9, 2018.

⁵⁸ In the alternative, we would support a policy to adopt a start date of the 12-year credit period for applicable facilities that is the earlier of (a) the date for which 45Q credits are first claimed, and (b) either (1) the date the proposed regulations were issued (June 2, 2020) because of the ability to rely on the proposed regulations, or (2) the date of the final regulations.

- A timing issue is also presented, because Notice 2020-12 was effective in February 2020, and the proposed regulations can be applied effective February 9, 2018.
 - For those definitions that were broadly defined in the Notice (such as components of carbon capture equipment), but are more narrowly defined by the proposed regulation, the following question arises: which rule or guidance should be followed for components installed (a) between January 1 and February 9, 2018, (b) after February 9, 2018 but before Notice 2020-12 was issued, and (c) after Notice 2020-12 was issued?
 - For those definitions that were narrow in the Notice but broadened by the proposed regulation, the following question arises: did commencement of construction of carbon capture equipment unintentionally commence in April 2020 with respect to a component of property that was not included in the Notice 2020-12 definition but was included in the proposed regulation definition?
- Are safe harbors in Notice 2020-12 limited to situations that fall within the definitions in Notice 2020-12, or are they also applicable to situations falling within the NPRM definitions?

The final regulations should answer these questions.

Comment 62. Application of Tax Equity Partnership Rev. Proc. 2020-12 to credit claimants. We request that the guidance in Rev. Proc. 2020-12, including the safe harbor provided by Section 4 of the Rev. Proc., be expanded in light of the election to allow the Section 45Q credit to another taxpayer under Section 45Q(f)(3)(B) and § 1.45Q-1(h)(3). We specifically request that, in the event of a Section 45Q(f)(3)(B) election, the Rev. Proc. also be made applicable to any credit claimant (as that term is defined in § 1.45Q-1(h)(3)). The Rev. Proc. appears to presume that the person claiming the 45Q credit will always be the owner of the carbon capture equipment (referred to as the “Project Company” in the guidance). However, when a section 45Q(f)(3)(B) election is made, the person claiming the 45Q credit will be a different person. We believe the same guidance, including the safe harbor with appropriate adjustments, should be made available to any person claiming the 45Q credit.

Comment 63. Form 8933. We suggest that Form 8933, as well as the instructions to Form 8933, be updated in light of the proposed regulations and the final regulations. We believe the form and its instructions should address every required election, certification, documentation and other required information to be reported or provided to the IRS.

Comment 64. ISO standards and incorporation by reference through 1 CFR Part 51. The proposed regulations attempt to incorporate by reference two separated ANSI/ISO standards. That incorporation by reference is subject to 5 USC § 552(a) and 1 CFR Part 51. The preamble to proposed rules are required by 1 CFR § 51.5(a) to discuss the ways that materials incorporated by reference (such as the ISO standards) are reasonably available to interested parties, or how it worked to make those materials reasonably available to interested parties. For final rules, even more is required by 1 CFR § 51.5(b). We are unclear whether the preamble to the proposed regulations complied with the § 51.5(a) requirements, or whether copies of the ISO standards have been filed at the Office of the Federal Register. To prevent the final 45Q regulations from being subject to any possible scrutiny regarding compliance with 5 USC § 552(a) and 1 CFR Part 51, we support inclusion in the preamble to the final 45Q regulations all statements necessary to comply with 1 CFR Part 51, including § 51.9.

Exhibit 1 (Credit for Carbon Oxide Sequestration)

Suggested Revisions to NPRM § 1.45Q-1

(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. 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 or dispose of~~⁵⁹), 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 inject~~⁶⁰), or utilizes it in a manner described in section 45Q(f)(5) and §1.45Q-4 (~~utilization or utilize~~⁶¹). 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) [no edits]

(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 sections 45Q(a)(3) and (4) and this section is the sum of—

(1) the applicable dollar amount (as determined under paragraphs (d)(1) and (d)(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 ~~sections-section~~⁶² 45Q(f)(5) and §1.45Q-4; and

(2) the applicable dollar amount (as determined under paragraphs (d)(3) and (d)(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 ~~as was~~⁶³ 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 ~~sections-section~~⁶⁴ 45Q(f)(5) and §1.45Q-4.

In the event approval of the written LCA report required by § 1.45Q-4(c)(3), or compliance with applicable requirements under 40 CFR part 98 subpart RR required by § 1.45Q-3(b)(1) or (2), is not

⁵⁹ See Comment 2.

⁶⁰ See Comment 2.

⁶¹ See Comment 2.

⁶² Only one section of the statute is referenced.

⁶³ Typo.

⁶⁴ Only one section of the statute is referenced.

obtained prior to the date the equipment was originally placed in service, the 12-year period will begin on the date of such approval or compliance.⁶⁵

(d) [no edits]

(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, Carbon Oxide Sequestration Credit (or successor forms, or pursuant to instructions and other guidance), and applies to all metric tons of qualified carbon oxide captured by the taxpayer using carbon capture equipment which is originally placed in service⁶⁶ 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 (a)(2) and paragraphs (b)(1) and (b)(2) 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, 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 9~~February 8,⁶⁷ 2018, and section 45Q(a)(1) and (2).

(1) Sunset of credit.⁶⁸ In general, a taxpayer may not claim credits under section 45Q(a)(1) and (a)(2) in taxable years after the year in which the 75,000,000 metric ton limit is reached 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.

(2) Disallowed claims. Disallowed claims will not be taken into account for purposes of the certification required by this paragraph. In the event credits taken into account for purposes of the certification are disallowed after the certification is made, then a taxpayer may claim credits under section 45Q(a)(1) and (a)(2) and paragraphs (b)(1) and (b)(2) of this section in taxable years after the year in which the certification is modified, until a new certification is made as required by this paragraph.⁶⁹

⁶⁵ See Comment 59.

⁶⁶ This language appears in section 45Q(b)(3) but was inadvertently omitted from the regulation.

⁶⁷ Section 45(g)(1) requires reference to Section 45Q(a) "as in effect on the day *before* the date of enactment of the Bipartisan Budget Act of 2018". The Act was enacted on February 9, 2018, so the reference date must be February 8, 2018.

⁶⁸ Because clause (2) is proposed to be added, a title is needed for clause (1).

⁶⁹ See Comment 57.

(g) *Installation of additional carbon capture equipment.* In general, a qualified⁷⁰ facility that placed carbon capture equipment in service before February 9, 2018, is entitled to the credit amounts for ~~property carbon capture equipment~~⁷¹ placed in service before February 9, 2018, subject to the limitations under paragraph (f) of this section. ~~The same facility may place additional carbon capture equipment in service.~~ Additional carbon capture equipment may be placed in service at that qualified facility⁷² on or after February 9, 2018. ~~The~~ That 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.

(g)(1), (2), (3) and (4): [no edits]

(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 §1.45Q-1(h)(3), 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.

(iii) *Reporting.* The taxpayer described in §1.45Q-1(h)(1) as eligible to claim the section 45Q credit must claim the credit on a Form 8933 (or successor forms, or pursuant to instructions and other guidance) with the taxpayer's Federal income tax return or Form 1065 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 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. In addition, as provided in Revenue Procedure 2020-23, 2020-18 I.R.B. 749 (see §601.601(d)(2)(i)(b) and (ii) of this chapter), the exception applies regarding the time to file an

⁷⁰ Section 45Q(b)(2) limits the “additional carbon capture equipment” provision to only “qualified” facilities. The regulations should also apply this provision only to “qualified facilities”.

⁷¹ Section 45Q(b)(2) describes the items installed as “carbon capture equipment” instead of the section 45 or 48 terminology of “property”. The credit is only available when *carbon capture equipment* (not any kind of property) is placed in service at a *qualified* facility (not any kind of facility).

⁷² The changes in this sentence are required to render the regulation consistent with the 45Q statute. By stating that the “same facility may place...”, the proposed regulation limits the additional carbon capture equipment to only equipment that is placed in service *by the facility*. But the statute does not require the qualified facility to be the actor or be the person to place the equipment in service. The statute does not contain any limitation on who places the equipment in service. The suggested revision implements the broader approach dictated by the statute.

amended return by a partnership subject to the centralized partnership audit regime enacted as part of the Bipartisan Budget Act of 2018 (BBA partnership)⁷³ for the 2018 and 2019 taxable years. The amended Federal income tax return or the amended Form 1065 must be filed, in no event, 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. In the case of a BBA partnership that chooses not to file an amended Form 1065 as permitted under Revenue Procedure 2020-23, the BBA partnership may make a late election by filing an AAR on or before October 15, 2021, but in no event, later than the applicable period of limitations on making adjustments under section 6235 for the reviewed year, as defined in §301.6241-1(a)(8) of the Procedure and Administration Regulations (26 CFR Part 301).

(2) *Contractually ensuring capture,⁷⁴ disposal, injection, or utilization of qualified carbon oxide.* A taxpayer is not required to physically carry out the capture,⁷⁵ 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,⁷⁶ disposal, injection, or utilization of the qualified carbon oxide does so in the manner required under section 45Q and these regulations.

(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 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~~⁷⁷.

(ii) *Multiple binding written contracts permitted.* A taxpayer may enter into multiple binding written contracts with multiple parties for the disposal, injection, or utilization of qualified carbon oxide. 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 or capture or contractually ensure the capture of qualified carbon oxide.⁷⁸

(iii) *Contract provisions.* Contracts ensuring the 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 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 1.45Q-3(c), and, in the case of a recapture event, promptly inform the capturing party of all

⁷³ See Comment 59.

⁷⁴ See Comment 5.

⁷⁵ See Comment 5.

⁷⁶ See Comment 5.

⁷⁷ See Comment 4.

⁷⁸ See Comment 6.

information that is pertinent to the recapture (i.e., location of leak, ~~quantity leaked amount~~ of qualified carbon oxide leaked,⁷⁹ ~~dollar value of section 45Q credit attributable to leaked~~ ~~qualified carbon oxide recapture amount~~⁸⁰) of section 45Q credits as listed in §1.45Q-5;

(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)(1) or (2) and §1.45Q-3(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) *Reporting of contract information.* The existence of each contract and the parties involved must be reported to the IRS annually on a Form 8933 (or successor forms, or pursuant to instructions and other guidance) by each party to the contract, regardless of the party claiming the credit. In addition to any information stated as required on Form 8933 (or successor forms, or pursuant to instructions and other guidance), 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 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

(D) 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 or injection~~,⁸¹ the name of the operator, ~~the field, unit, and reservoir, location by county and state,~~⁸² 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.

(v) *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 §1.45Q-1(h)(3).

⁷⁹ We believe the intent of the parenthetical is to refer to some items required to be reported by § 1.45Q-5(g)(5). The defined term in § 1.45Q-5(c) is "leaked amount of qualified carbon oxide", required to be reported by § 1.45Q-5(g)(5)(ii) (as modified in Exhibit 5 on page 74).

⁸⁰ We believe the intent of the parenthetical is to refer to some items required to be reported by § 1.45Q-5(g)(5). The stricken language appears to be a reference the 'recapture amount' defined in § 1.45Q-5(e), required to be reported by § 1.45Q-5(g)(5)(i). The term "dollar value" of leaked qualified carbon oxide does not appear in § 1.45Q-5.

⁸¹ See Comment 1.

⁸² See Comment 7.

(3) *Election to allow the section 45Q credit to another taxpayer.* The taxpayer described in §1.45Q-1(h)(1) as eligible to claim section 45Q credits may elect (section 45Q(f)(3)(B) election)⁸³ 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 taxpayer that makes the election (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.

(i) *Example.* Electing Taxpayer, E, captures ~~100~~ 500,000⁸⁴ metric tons of qualified carbon oxide with carbon capture equipment that was placed in service in 2017. E contracts with two companies, A and B, for the disposal of the qualified carbon oxide. The capture and disposal of the qualified carbon oxide makes E eligible for a section 45Q credit at a rate of \$10 per metric ton, for a total section 45Q credit of ~~\$1,000~~ \$5,000,000. E contractually ensures that A will dispose of 300,000 metric tons of qualified carbon oxide and that B will dispose of ~~70~~ 200,000 metric tons of qualified carbon oxide. E may make a section 45Q(f)(3)(B) election to allow up to \$3,000,000 of section 45Q credit to A and up to ~~\$700~~ \$2,000,000 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.

(h)(3)(ii) and (iii): [no edits]

(iv) *Required information.* For the section 45Q(f)(3)(B) election to be valid, the election statement of the electing taxpayer on Form 8933 (or successor forms, or pursuant to instructions and other guidance) under §1.45Q-1(h)(3)(ii) must indicate that an election is being made under section 45Q(f)(3)(B) with respect to a qualified facility⁸⁵. The electing taxpayer must provide each credit claimant with a copy of the electing taxpayer's Form 8933 (or successor forms, or pursuant to instructions and other guidance). The electing taxpayer must, in addition to any information required on Form 8933 (or successor forms, or pursuant to instructions and other guidance), set forth the following information with respect to such qualified facility—

(A) The electing taxpayer's name, address, taxpayer identification number, location, and e-GGRT ID number(s) (if available) of ~~each~~ such qualified facility where qualified⁸⁶ carbon oxide was captured;

(B) The full amount of credit attributable to the taxpayer prior to the election;

⁸³ See Comment 8.

⁸⁴ For the project to qualify for 45Q credits, the amounts of qualified carbon oxide in the example must be at least 500,000 metric tons of CO₂ since the carbon capture equipment was placed in service before February 9, 2018. This change impacts other amounts of qualified carbon oxide and amounts of the 45Q credit in the other portions of the example.

⁸⁵ In the event the electing taxpayer owns more than one carbon capture equipment and makes separate elections to different credit claimants with respect to each equipment, the electing taxpayer should not be required to provide all information with respect to all carbon capture equipment to all credit claimants. The obligation of the electing taxpayer to share information with a credit claimant should be on a project by project basis.

⁸⁶ See Comment 10.

(C) The name, address, and taxpayer identification number of each credit claimant, and the location and e-GGRT ID number(s) (if available) of each secure geological storage ~~facility-site~~⁸⁷ where the qualified carbon oxide is disposed of or injected (secure geological storage site);

(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 with respect to a section 45Q credit claimant, the section 45Q⁸⁸, such credit claimant must include the following information on Form 8933 (or successor forms, or pursuant to instructions and other guidance) with its timely filed Federal income tax return or Form 1065 (including extensions)—

(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 location and e-GGRT ID number(s) (if available) of each qualified facility where qualified⁸⁹ carbon oxide was captured;

(D) The location and e-GGRT ID number(s) (if available) of each secure geological storage ~~facility-site~~⁹⁰ where the qualified carbon oxide is disposed of or injected;

(E) The full dollar amount of section 45Q credits attributable to each electing taxpayer prior to the election and the corresponding metric tons of qualified⁹¹ 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 qualified⁹² carbon oxide; and

(G) A copy of the electing taxpayer's Form 8933 (or successor forms, or pursuant to instructions and other guidance).

~~(i) *Reporting.* (1)(d) *Form 8933.* Taxpayers that capture qualified carbon oxide giving rise to the section 45Q credit described in § 1.45Q-1(h)(i) and (ii),⁹³ and taxpayers that dispose of, inject, or utilize qualified carbon oxide,⁹⁴ must file Form 8933 (or successor forms, or pursuant to instructions and other guidance) 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 (or successor forms, or pursuant to instructions and other guidance) 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.⁹⁵~~

⁸⁷ See Comment 35.

⁸⁸ See Comment 9.

⁸⁹ See Comment 10.

⁹⁰ See Comment 35.

⁹¹ See Comment 10.

⁹² See Comment 10.

⁹³ The original sentence only addressed taxpayers described in § 1.45Q-1(h)(1)(i) that physically *capture* the qualified carbon oxide, and ignores § 1.45Q-1(h)(1)(ii) which attributes the credit, for carbon capture equipment originally placed in service at a qualified facility on or after February 9, 2018, to the person that *owns* the carbon capture equipment. Both possibilities should be encompassed in this sentence. Separately, this sentence seems unnecessarily duplicative in light of § 1.45Q-1(h)(1)(iii) first sentence and, for that reason, could be eliminated.

⁹⁴ Inserted from second sentence, rendering the second sentence unnecessary.

⁹⁵ Moved from § 1.45Q-3(d) fifth and sixth sentences.

~~(2)(e) Required information~~Documentation. All applicable ~~Documentation~~documentation,⁹⁶ elections,⁹⁷ certifications⁹⁸ and other information⁹⁹ required by §§ 1.45Q-1 through 1.45Q-5 must be filed in accordance with Form 8933 (or successor forms, or pursuant to instructions and other guidance).¹⁰⁰

~~(3)(e) Failure to submit complete documentation or certification information—(i) In general~~. No section 45Q credit ~~is will be~~ allowed for any taxable year for which ~~the to~~ a taxpayer (including a credit claimant~~s~~claimant) ~~for any taxable year for which such taxpayer~~¹⁰¹ has failed to timely submit complete applicable documentation, elections, and certifications and other information that is required by ~~this regulation~~ §§ 1.45Q-1 through 1.45Q-5 or Form 8933 (or successor forms, or pursuant to instructions and other guidance). The credit will be allowed for a taxpayer only for a taxable year for which complete applicable documentation, elections, and certifications and other required information has been timely submitted by such taxpayer.¹⁰²

~~(ii) Certifications~~. 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. 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. If a section 45Q credit was 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 proposed regulation, for which certifications were not submitted, such certifications may be submitted with an amended Federal income tax return, an amended Form 1065, or an AAR, as applicable, for the taxable year in which the section 45Q credit was claimed.¹⁰³

~~(j) (†) Applicability date~~. This section applies to taxable years beginning after [date final regulations are published in the **Federal Register**]. Taxpayers may choose to apply this section for taxable years beginning on or after ~~February 9, 2018~~ December 31, 2017¹⁰⁴, 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.

⁹⁶ Such as § 1.45Q-3(d), and § 1.45Q-4(c)(2).

⁹⁷ Such as § 1.45Q-1(e), (h)(3), and 1.45Q-2(g)(4).

⁹⁸ Such as § 1.45Q-2(h)(2) and (4), and § 1.45Q-3(d).

⁹⁹ Such as § 1.45Q-1(h)(1)(iii), (h)(2)(iv), (h)(3)(iv), (h)(3)(v), and § 1.45Q-5(g)(5).

¹⁰⁰ Moved from § 1.45Q-3(c).

¹⁰¹ The proposed regulation could improperly be read to imply that the failure of a single taxpayer (such as a credit claimant) to file complete and timely documentation and certifications would result in no 45Q credits for all of the taxpayers associated with that carbon capture equipment. It would be fundamentally unfair for numerous taxpayers to be penalized for the failures of a single taxpayer to file its return timely or completely. As a result, the suggested revision would modify the proposed regulation and render the provision applicable to each taxpayer individually, so that the failure by one taxpayer does not preclude allowance of tax credits to other taxpayers associated with that carbon capture equipment which complied with these timeliness and completeness requirements.

¹⁰² Moved from § 1.45Q-3(e).

¹⁰³ Moved from § 1.45Q-3(e).

¹⁰⁴ See Comment 57.

Exhibit 2 (Definitions)

Suggested Revisions to NPRM § 1.45Q-2

(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.

The amount of qualified carbon oxide is presumed to be the lesser of the amount measured at the source of capture and the amount verified at the point of disposal, injection, or utilization, unless the taxpayer can establish to the satisfaction of the Secretary that the greater amount is the correct amount.¹⁰⁵

(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~~¹⁰⁶ components of property that are used to capture ~~or process~~¹⁰⁷ carbon oxide until the carbon oxide is transported for disposal, injection, or utilization.

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

(i) ~~Separating, purifying, drying, and/or~~¹⁰⁸ capturing carbon oxide that would otherwise be released into the atmosphere from an industrial facility; or

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

¹⁰⁵ See Comment 39. C.

¹⁰⁶ See Comment 11. B.

¹⁰⁷ See Comment 11. A.

¹⁰⁸ See Comment 11. C. Also, we are not aware of a single piece of equipment that could perform all four functions: separate, purify, dry *and* capture carbon oxide.

~~(iii) Compressing or otherwise increasing the pressure of carbon oxide.~~¹⁰⁹

(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.¹¹⁰ Components of carbon capture equipment may¹¹¹ include, but are not limited to, absorbers, compressors, conditioners, cooling towers, dehydration equipment, dehydration systems, electrostatic filtration, engines, filters, fixtures, glycol ~~contractors~~ contactors,¹¹² heat exchangers, liquefaction equipment, lube oil systems, machinery, materials, membranes, meters, monitoring equipment, motors, mounting equipment, pipes, power generators and regenerators, pressure vessels and other vessels, processing equipment, processing plants, processing units, pumps, reboilers, recycling units, scrubbers, separation vessels, solvent pumps, sorbent vessels, specially designed flue gas ducts, support structures, tracking equipment, treating equipment, turbines, water wash equipment, and other carbon oxide related equipment.

(3) *Excluded components.* Components of carbon capture equipment do not include pipelines, branch lines, or land and marine transport vessels used for transporting ~~captured~~¹¹³ qualified carbon oxide for disposal, injection, or utilization. However, a gathering and distribution system that collects carbon oxide captured from a qualified facility or multiple 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)(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 multiple one or more other¹¹⁴ taxpayers or projects is carbon capture equipment.¹¹⁵

(d) Industrial facility. An industrial facility is a facility that produces a carbon oxide stream from a fuel combustion source or fuel cell,¹¹⁶ a manufacturing process, an electricity generating facility,¹¹⁷ or a fugitive carbon oxide emission source that, absent capture and disposal, injection or utilization¹¹⁸, would otherwise be released into the atmosphere as industrial emission of greenhouse gas or lead to such release.

¹⁰⁹ Subparagraph (1)(iii) essentially says that carbon capture equipment is equipment that is used for the purpose of compressing or increasing the pressure of carbon oxide, regardless of whether it captured carbon oxide or removed it from the air. This is too broad of a definition of carbon capture equipment and expands beyond the statutory definition of carbon capture equipment. Clause (iii) should be removed.

¹¹⁰ This sentence is not necessary, since subparagraph (1) defines what the equipment is, and subparagraph (2) merely provides a non-exhaustive list of components that may be included within the defined term. In addition, the sentence is not accurate because one can physically act on carbon oxide by performing some of the functions listed (i.e. compression, liquefying, pumping) and still not capture the carbon oxide (i.e. one can compress carbon oxide but, compression alone does not result in capture of carbon oxide).

¹¹¹ See Comment 11. B.

¹¹² Also, the term “glycol contactors” should be used instead of “glycol contractors” in Notice 2020-12 Section 5.02(1)(b) and (2)(c).

¹¹³ The word “captured” is unnecessarily redundant. See Comment 27.

¹¹⁴ See Comment 11. F.

¹¹⁵ We also agree with § 1.45Q-2(c)(3) regarding what is excluded from “carbon capture equipment”, and we agree with the clarification that a gathering and distribution system as part of a single project is included within the defined term.

¹¹⁶ We note that the words “or fuel cell” were added to the NPRM definition of industrial facility but were not included in the Notice 2020-12 Section 3.03 definition of the same term. The beginning of construction guidance should be updated accordingly.

¹¹⁷ See Comment 12.

¹¹⁸ See Comment 1.

(1) Exclusion. An industrial facility does not include a facility that produces carbon dioxide from a carbon dioxide production well ~~wells at a natural carbon dioxide bearing formations or a naturally occurring subsurface spring~~. A carbon dioxide production well is a well that produces ~~deposit of natural a gas or liquid~~ that contains ~~less than 10~~ more than 90¹¹⁹ percent carbon dioxide by volume ~~is not a natural carbon dioxide bearing formation~~. For other deposits, whether a well is producing from a natural carbon dioxide bearing formation is based on all the facts and circumstances.¹²⁰

(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 multiple units of one or more¹²¹ products, other than carbon oxide, that are intended to be sold at a profit, or are used for a commercial purpose. All facts and circumstances with respect to the process and products are to be taken into account.

(4) Examples. The following examples ~~illustrates~~ illustrate the rules of paragraph (a) and (d)(3) 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 qualified 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 attempted to be sold~~¹²². 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 ~~the taxpayer~~, Taxpayer B has not secured a contract to sell methane and does not have any plans to use the methane for a commercial purpose. 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). The carbon dioxide captured by the process is not qualified carbon oxide.

¹¹⁹ See Comment 13.

¹²⁰ In the event our suggested revision to § 1.45Q-2(d)(1) is not adopted, we would suggest an alternative definition of a CO₂ production well that is better than what is contained in the NPRM:

“An industrial facility does not include a facility that produces carbon dioxide from any hole drilled in the earth for the primary purpose of extracting carbon dioxide from a geologic formation or group of formations which contain deposits of carbon dioxide.”

This definition is based on the definition of carbon dioxide production well in 40 CFR § 98.6, which are EPA GHGRP subpart PP regulations requiring reporting of certain information regarding carbon dioxide which is, among other things, extracted from CO₂ production wells for purposes of supplying the CO₂ to a commercial application such as the food and beverage market. We suggest that this 40 CFR § 98.6 definition be adopted in preference over the NPRM proposed § 1.45Q-2(d)(1) definition, in the event our suggested modification above is rejected. While not entirely consistent with the definition of the term in the carbon capture and CO₂-EOR industries, and while it still contains the problems noted in the 45Q Full Reg Project’s 2019 comments listed above, the EPA definition does come much closer to the common understanding of the term than that proposed in the NPRM. The preamble to the EPA GHGRP subpart PP proposed regulations described CO₂ production wells as wells producing at four natural CO₂ formations: Jackson Dome, Bravo Dome, Sheep Mountain, and McElmo Dome. 74 Fed. Reg. 16584-85 (April 10, 2009). The industry already must deal with this EPA definition despite the commonly understood definition in the industry, and we do not need a third variation on the meaning of a “CO₂ production well”.

¹²¹ See Comment 14.

¹²² See Comment 14. Comment 16.

(ii) Example 2. Assume the same facts as in Example 1 except that the methane that was attempted to be sold was instead used as fuel to power the processing equipment. The fuel for the processing equipment would have otherwise been purchased. Using the methane as a fuel for the processing equipment reduces the operational expense associated with the processing equipment. Because the manufactured methane was used for a commercial purpose, the carbon dioxide was not the only product that was manufactured. The separation process applied to the gases is a manufacturing process within the meaning of paragraph (d)(3).¹²³

(e): [no edits]

(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 that is deliberately released from naturally occurring subsurface springs or more than a nominal amount of carbon dioxide¹²⁴ using natural photosynthesis. A deliberate release of carbon dioxide from naturally occurring subsurface springs means an intentional action that causes carbon dioxide in its naturally occurring state in the earth's subsurface to emerge to the surface of the earth in a defined flow and in an amount large enough to form a stream-like flow.¹²⁵

(g) *Qualified facility.* A qualified facility means any industrial facility, ~~electricity generating facility,~~¹²⁶ or direct air capture facility, the construction of which begins before January 1, 2024, 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, 2020-11 I.R.B. 495 (see §601.601(d)(2)(ii) of this chapter), for guidance on the determination of when construction has begun on a qualified facility or on carbon capture equipment.

(1) *Emissions and capture requirements.* The carbon capture equipment placed in service at the¹²⁷ 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 oxide¹²⁸ 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. Equipment located at the facility captures 35,000 metric tons of carbon dioxide, all of

¹²³ See Comment 14.

¹²⁴ See Comment 16.

¹²⁵ See Comment 17.

¹²⁶ See Comment 12.

¹²⁷ See Comment 18.

¹²⁸ Typo.

which are utilized in a manner consistent with section 45Q(f)(5) and §1.45Q-4. The ethanol plant is a qualified facility 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. Equipment located at the facility captures 50,000 metric tons of carbon dioxide, all of which are utilized in a manner consistent with section 45Q(f)(5) and §1.45Q-4, and 400,000 metric tons of carbon dioxide, all of which are properly disposed of in secure geological storage. The total amount of carbon dioxide captured during the taxable year is 450,000 metric tons. The electricity generating facility is not a qualified facility during the taxable year with respect to the 400,000 metric tons of carbon dioxide disposed of because it did not meet the requirement to capture not less than 500,000 metric tons of qualified carbon during the taxable year, and is not a qualified facility during the taxable year with respect to the 50,000 metric tons of carbon dioxide utilized because it did not meet the requirement to emit not more than 500,000 metric tons of carbon oxide into the atmosphere during the taxable year¹²⁹.

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

(3) *Annualization of first-year qualified carbon oxide emission and capture amounts--(i) In general.* For the year in which carbon capture equipment is placed in service at a qualified facility, annualization of the amount of qualified carbon oxide emitted and captured (or just captured in the case of a direct air capture facility)¹³⁰ 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 its first year is less than the threshold requirements under paragraph (g)(1) of this section.

(ii) *Calculation.* Annualization is only ~~be~~¹³¹ available for the first year in which the carbon capture equipment is placed in service at the qualified facility. Annualized amounts must be calculated by –

(A) Determining the amount of qualified carbon oxide emitted and captured (or just captured in the case of a direct air capture facility)¹³² during the taxable year in which the carbon capture equipment was placed in service at the qualified facility,

(B) Dividing the amount of qualified carbon emitted or captured by the number of days in the tax year 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; and

(C) Multiplying by 365.

¹²⁹ The answer to the example is not complete without addressing both (a) why the disposal amounts did not qualify the facility, and (b) why the utilized amounts did not qualify the facility.

¹³⁰ See Comment 19.

¹³¹ Typo.

¹³² See Comment 19.

(iii) *Consequences.* If the annualized amounts of qualified carbon oxide emitted and captured (or just captured in the case of a direct air capture facility)¹³³ 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. 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 person ~~described in section 45Q(f)(3)(A)(ii) and § 1.45Q-1(h)(1), that owns the carbon capture equipment and physically or contractually ensures the capture and disposal, injection or utilization of such qualified carbon oxide~~¹³⁴ 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).

(i) *Applicable facility.* An applicable facility means a qualified facility described in section 45Q(f)(6)(B)¹³⁵ ~~and § 1.45Q-2(g)(4)(i)~~¹³⁶ 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 (or successor forms, or pursuant to instructions and other guidance) with the taxpayer's income tax return for the 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 (or successor forms, or pursuant to instructions and other guidance), 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 (the cost of the new components of property plus the value of the used components of property) (80/20 Rule).

¹³³ See Comment 19.

¹³⁴ See Comment 20. In the alternative, we would support the elimination of the following words from the first sentence of § 1.45Q-2(g)(4): "section 45Q(f)(3)(A)(ii) and".

¹³⁵ The applicable facility is only defined in Section 45Q(f)(6)(B), and we would support changes to the definition that limits the definition to only the defined term in Section 45Q(f)(6)(B). The definition of applicable facility should not be expanded in a way so as to limit applicable facilities to only those for which an election is made. Section 45Q(f)(6)(A) only provides for an election with respect to applicable facilities defined in Section 45Q(f)(6)(B); it does not define an applicable facility – Section 45Q(f)(6)(B) does. Separately, and not reflected in the blackline text, we would also support eliminating the words "described in section 45Q(f)(6)" because the reference to the statute is unnecessarily duplicative since the definition in this proposed regulation simply quotes Section 45Q(f)(6)(B).

¹³⁶ The definition of applicable facility in this § 1.45Q-2(g)(4)(i) should not reference itself (§ 1.45Q-2(g)(4)(i)).

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~~¹³⁷ by that taxpayer to transport carbon oxides captured ~~from by~~ that taxpayer's carbon capture equipment¹³⁸ ~~qualified facility that would otherwise be emitted into the atmosphere~~¹³⁹. For purposes of the 80/20 Rule, new components of property may include components of property that were used at a facility that was not a qualified facility.¹⁴⁰

(6) Original planning and design. For purposes of this paragraph (g), original planning and design means at least one version of the engineering plans or designs for the facility (either issued for construction drawings or earlier version) identifies both the point at which 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.¹⁴¹

(h) *Qualified enhanced oil or natural gas recovery project.* The term qualified enhanced oil or natural gas recovery project has the same meaning as 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 enhanced oil recovery credit is claimed for the taxable year.¹⁴² 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 (or successor forms, or pursuant to instructions and other guidance) 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 (or successor forms, or pursuant to instructions and other guidance) 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

¹³⁷ See Comment 21. A.

¹³⁸ See Comment 21. B.

¹³⁹ See Comment 21. C.

¹⁴⁰ See Comment 22.

¹⁴¹ See Comment 20.

¹⁴² See Comment 24.

an AAR, as applicable, the petroleum engineer's certification for a natural gas project¹⁴³ will be treated as filed timely if it is attached to a Form 9933 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~~ December 31, 2017¹⁴⁴ and beginning before the date of issuance of this ~~proposed~~ regulation, for which the petroleum engineer's certification for a natural gas project¹⁴⁵ was not submitted, the petroleum engineer's certification for a natural gas project¹⁴⁶ will be treated as filed timely if it is attached to an amended Form 9933 for any taxable year ending after ~~February 9, 2018~~ December 31, 2017,¹⁴⁷ but not for taxable years beginning after the date of issuance of these ~~proposed~~ regulations.¹⁴⁸

(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,~~¹⁴⁹ cannot be treated as qualified carbon oxide, disposed of in secure geological storage, injected,¹⁵⁰ or utilized in a manner described in section 45Q(f)(5). This rule will not apply to an oil reservoir if—

- (i) The reservoir permanently ceased oil production;
- (ii) The operator has obtained an EPA ~~UIC~~ Underground Injection Control¹⁵¹ class VI permit; and
- (iii) The operator complies with 40 CFR Part 98 subpart RR.

(6) *Tertiary Injectant.* For purposes of the section 45Q credit, a tertiary injectant is any injectant including qualified carbon oxide that is injected into and stored in—used as part of 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. Tertiary injectant does not include a hydrocarbon injectant defined in Section 193(b)(2) of the Code that is recoverable.¹⁵²

(i): [no edits]

(j) *Applicability date.* This section applies to taxable years beginning after [date final regulations are published in the **Federal Register**]. Taxpayers may choose to apply this section for taxable years beginning on or after ~~February 9, 2018~~ December 31, 2017¹⁵³, 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.

¹⁴³ See Comment 28.

¹⁴⁴ See Comment 57.

¹⁴⁵ See Comment 24.

¹⁴⁶ See Comment 24.

¹⁴⁷ See Comment 57.

¹⁴⁸ In the alternative, we would suggest relocating the two sentences of § 1.45Q-2(h)(4) and splitting them into one-sentence-only new subparagraphs (2)(iv) and (2)(v) in § 1.45Q-2(h). These two sentences only apply with respect to natural gas projects, as do subparagraphs (2)(i), (2)(ii) and (2)(iii) of § 1.45Q-2(h).

¹⁴⁹ See Comment 23.

¹⁵⁰ See Comment 2.

¹⁵¹ This is the only time that "UIC" appears in the regulations, so we suggest using the full name of the agency program.

¹⁵² See Comment 26.

¹⁵³ See Comment 57.

Exhibit 3 (Secure Geological Storage)

Suggested Revisions to NPRM § 1.45Q-3

(a) *In general.* To qualify for the section 45Q credit, a taxpayer must either physically or contractually dispose of ~~captured~~¹⁵⁴ qualified carbon oxide in secure geological storage, whether for disposal or injection,¹⁵⁵ in the manner provided in §1.45Q-3(b) 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, whether for disposal or injection,¹⁵⁶ 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) ~~Stored~~Injected and contained,¹⁵⁷ and 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~~¹⁵⁸

(2) Used as a tertiary injectant in a qualified enhanced oil ~~or natural gas~~¹⁵⁹ recovery project and ~~stored~~¹⁶⁰

(i) injected and contained¹⁶¹ in compliance with applicable requirements under 40 CFR Part 98 subpart RR, or

(ii) injected in safe, long-term associated storage in compliance with¹⁶² the International Organization for Standardization (ISO) standards endorsed by the American National Standards Institute (ANSI) under CSA/ANSI ISO 27916:19, Carbon dioxide capture, transportation and geological storage – Carbon dioxide storage using enhanced oil recovery (CO₂-EOR) (CSA/ANSI ISO 27916:19)¹⁶³; or

(3) Injected into a well that complies with applicable Underground Injection Control regulations onshore or offshore under submerged lands within the territorial jurisdiction of States.

¹⁵⁴ See Comment 27.

¹⁵⁵ See Comment 3.

¹⁵⁶ See Comment 3.

¹⁵⁷ Subpart RR's source category is described in this manner: "The geologic sequestration of carbon dioxide (CO₂) source category comprises any well or group of wells that inject a CO₂ stream for long-term containment in subsurface geologic formation." 'Injection' and 'containment' are the operative words in subpart RR, not 'stored'.

¹⁵⁸ Moved to § 1.45Q-3(b)(2)(ii) below.

¹⁵⁹ See Comment 28. Enhanced *natural gas* recovery projects are not within the scope of the ISO standard.

¹⁶⁰ See footnote 157 above.

¹⁶¹ See footnote 157 above.

¹⁶² Section 1.1 of the ISO standard describes the scope of the standard as relating to injection of CO₂ in CO₂-EOR operations for which quantification is sought of CO₂ that is in safe, long-term associated storage. The ISO standard then defines "safe, long-term" and defines "associated storage". The final version of § 1.45Q-3(b)(2) should use the language of the ISO standard in describing the compliance that is required.

¹⁶³ This defined term was provided in the Summary at 85 Fed. Reg. 34059 third column, second paragraph, last sentence, but was never defined in the proposed regulations.

~~(c) Documentation.~~ Documentation must be filed in accordance with Form 8933 (or successor forms, or pursuant to instructions and other guidance).¹⁶⁴

~~(d) Disposal and injection amounts verified.~~ The amount of carbon oxide verified at the point of disposal or injection shall be determined by a certification described in paragraphs(c)(1) or (c)(2) of this section, subject to paragraph (c)(3) of this section.¹⁶⁵

~~(1) Injection and disposal~~¹⁶⁶ ~~Certification.~~ For qualified enhanced oil or natural gas recovery projects in which the taxpayer reported volumes of carbon oxide to the EPA pursuant to 40 CFR Part 98 subpart RR, the taxpayer may self-certify the ~~volume amount~~¹⁶⁷ of ~~qualified~~¹⁶⁸ carbon oxide claimed for purposes of section 45Q. For purposes of applying subpart RR with respect to section 45Q, the term carbon oxide is substituted for carbon dioxide, and Form 8933 (or successor forms, or pursuant to instructions and other guidance) shall include a statement of both the amounts of carbon dioxide, and the amounts of all carbon oxide combined other than carbon dioxide.¹⁶⁹

~~(2) Injection certification.~~¹⁷⁰ For qualified enhanced oil ~~or natural gas~~¹⁷¹ recovery projects in which the taxpayer determined volumes pursuant to CSA/ANSI ISO 27916:19, a taxpayer may prepare documentation as outlined in CSA/ANSI ISO 27916:19 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, must certify the amount of qualified carbon dioxide claimed for purposes of section 45Q, and must provide an affidavit stating that it is independent from the taxpayer, electing taxpayer and credit claimant(s).¹⁷² Certifications must be made annually and under penalties of perjury.¹⁷³ For any leaked amount of qualified carbon oxide (as defined in §1.45Q-5(c)) that is carbon dioxide and that is¹⁷⁴ determined pursuant to CSA/ANSI ISO 27916:19, 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 (or successor forms, or pursuant to instructions and other guidance) 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 (or successor forms, or pursuant to instructions and other guidance) with a timely filed Federal income tax return or Form 1065, including extensions or for the purpose of~~

¹⁶⁴ Relocated to new § 1.45Q-1(i)(2), as described in Comment 30.

¹⁶⁵ See Comment 31.

¹⁶⁶ The title to proposed § 1.45Q-3(d)(1) indicates that subpart RR applies to injection and disposal, as compared to the title to proposed § 1.45Q-3(d)(2) which only applies to injection. We believe creating separate subparagraphs for these two categories of certifications helps draw the distinction between the separate requirements in each situation.

¹⁶⁷ While subpart RR uses the term “volume” of carbon dioxide, section 45Q never uses the word “volume”. Instead, section 45Q provides a credit based on the “amount” of qualified carbon oxide.

¹⁶⁸ See Comment 10.

¹⁶⁹ See Comment 29.

¹⁷⁰ The title to proposed § 1.45Q-3(d)(2) indicates that the ISO standard only applies to injection, not disposal.

¹⁷¹ See Comment 28.

¹⁷² See Comment 32.

¹⁷³ See Comment 32.

¹⁷⁴ The ISO standard does not apply to any carbon oxide other than CO₂. We are not aware of any suggestion by any party in the carbon capture industry, or any comments in response to Notice 2019-32, that suggests the ISO standard’s application to carbon dioxide be extended to any other carbon oxides.

~~this rule, amendments to Federal income tax returns, Forms 1065, or on AARs, as applicable.~~¹⁷⁵ For purposes of section 45Q, a qualified engineer is a petroleum engineer that is duly registered, certified or licensed as a professional engineer in any State, and a qualified geologist must either be registered, certified or licensed as a professional geologist in a State that is a member of the National Association of State Boards of Geology, or be designated as a certified professional geologist by the American Institute of Professional Geologists.¹⁷⁶

(3) Recapture amounts. If the ~~volume amount~~¹⁷⁷ of qualified carbon oxide certified and reported under paragraph (c)(1) or (c)(2) of this section 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 (or successor forms, or pursuant to instructions and other guidance). 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. 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. If a section 45Q credit was 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 proposed regulation, for which certifications were not submitted, such certifications may be submitted with an amended Federal income tax return, an amended Form 1065, or an AAR, as applicable, for the taxable year in which the section 45Q credit was claimed.¹⁷⁸

~~(d) (f) Applicability date.~~ This section applies to taxable years beginning after [date final regulations are published in the **Federal Register**]. Taxpayers may choose to apply this section for taxable years beginning on or after ~~February 9, 2018~~ December 31, 2017¹⁷⁹, 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.

¹⁷⁵ Relocated to new § 1.45Q-1(i)(2), as described in Comment 30.

¹⁷⁶ See Comment 32.

¹⁷⁷ See footnote 167 above.

¹⁷⁸ Relocated to new § 1.45Q-1(i)(2), as described in Comment 30.

¹⁷⁹ See Comment 57.

Exhibit 4 (Utilization)

Suggested Revisions to NPRM § 1.45Q-4

§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 such¹⁸⁰ 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 in making or producing a product¹⁸¹ 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 or as determined by the Secretary of the Treasury or his delegate.¹⁸²

(b) *Measurement Amount Utilized*¹⁸³. For purposes of determining the amount of qualified carbon oxide utilized by the taxpayer under §1.45Q-1(b)(2)(ii) and (c)(2)(ii), such amount is equal to the metric tons of qualified carbon oxide (and not carbon dioxide equivalent)¹⁸⁴ which the taxpayer demonstrates, based upon an analysis of lifecycle greenhouse gas emissions (LCA), were—

- (1) Captured and permanently isolated from the atmosphere through use of a process described in paragraph (a) of this section¹⁸⁵ (isolated), or
- (2) Displaced from being emitted into the atmosphere through use of a process described in paragraph (a) of this section (displaced).

(c) *Lifecycle greenhouse gas emissions and lifecycle analysis—*

- (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.

¹⁸⁰ This word appears in the statute but was inadvertently omitted from the regulation.

¹⁸¹ See Comment 40. A.

¹⁸² In the alternative, as suggested in Comment 40. E., paragraph (a)(3) would be reworded as follows: “(3) The use of such qualified carbon oxide ~~for any other purpose in making or producing a product~~ for which ~~a~~any 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 of the Treasury or his delegate,~~ with such product and market identified and explained by the taxpayer on Form 8933.”

¹⁸³ See Comment 39. A.

¹⁸⁴ See Comment 37.

¹⁸⁵ See Comment 40.

(2) ~~Measurement Verification~~¹⁸⁶. The taxpayer ~~measures and~~¹⁸⁷ ~~utilizes~~¹⁸⁸ the amount of ~~qualified~~¹⁸⁹ carbon oxide captured and ~~utilized~~¹⁹⁰ through a combination of direct measurement and LCA. ~~The measurement~~¹⁹¹ ~~That verification~~¹⁹² and the 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,~~ ~~the electing taxpayer and the credit claimant,~~ and the verification must be made under penalties of perjury.¹⁹³ For purposes of section 45Q credits, the written LCA report shall ensure that a section 45Q credit can be claimed with respect to only qualified carbon oxide and not any other gas or emission.¹⁹⁴

(3) ~~Approval Submission~~¹⁹⁵ of the LCA. The taxpayer must submit the written LCA report required by paragraph (c)(1) of this section to the IRS and the Department of Energy (DOE). ~~The LCA will be subject to a technical review by the DOE, and the IRS, in consultation with the DOE and the Environmental Protection Agency, will determine whether to approve the LCA.~~¹⁹⁶ The taxpayer must also make public its request for approval and written LCA report.¹⁹⁷

(4) ~~Submission Approval~~¹⁹⁸ of the LCA. ~~[Reserved].~~ The written LCA report will be subject to a technical review by the DOE, and the IRS, in consultation with the DOE and the Environmental Protection Agency, will determine whether to approve the written LCA report.¹⁹⁹ An approved written LCA report will be made public and any taxpayer may rely on the written LCA report.²⁰⁰

(5) Examples.²⁰¹

(i) Example 1. Taxpayer, F, captures 56,000 metric tons of qualified carbon oxide with carbon capture equipment installed at an industrial facility in 2020. F contracts with Manufacturer, M, to chemically convert all of that qualified carbon oxide to a chemical product in which the qualified carbon oxide is securely stored, and M contractually ensures it will so utilize all of the qualified carbon oxide. For every 2 tons of product manufactured, M uses one metric ton of qualified carbon oxide, making 112,000 tons of product in 2020. The written LCA report approved by the IRS demonstrates (a) the incumbent case of manufacturing the product emits 10 metric tons of CO₂ equivalent per ton of product made, (b) the process case utilizing the captured qualified carbon oxide emits only 8 metric tons of CO₂ equivalent per ton of product made, and (c) of the net 2 metric tons of CO₂ equivalent emission reduction per ton of product made, only 2% of that emission reduction is attributable on a pro rata basis to displacement of carbon oxide compared to other greenhouse gas emissions (which equates to 0.040 metric tons of carbon oxide displaced per ton of product made). The utilization process in 2020 results in the

¹⁸⁶ See Comment 39. B.

¹⁸⁷ See Comment 39. B.

¹⁸⁸ See Comment 10.

¹⁸⁹ See Comment 27.

¹⁹⁰ See Comment 39. B.

¹⁹¹ See Comment 43.

¹⁹² See Comment 37. and Comment 42.

¹⁹³ See Comment 44.

¹⁹⁴ Moved to § 1.45Q-4(c)(4). See Comment 44.

¹⁹⁵ See Comment 44.

¹⁹⁶ See Comment 44.

¹⁹⁷ Moved from § 1.45Q-4(c)(4). See Comment 44.

¹⁹⁸ See Comment 44.

¹⁹⁹ See Comment 45.

isolation of 56,000 metric tons of qualified carbon oxide, and 4,480 metric tons of carbon oxide displaced. F may claim section 45Q credits for a total of 60,480 metric tons of qualified carbon oxide that was utilized.

(ii) Example 2. Assume the same facts as in Example 1, except that (a) the process case utilizing the captured qualified carbon oxide emits 13 metric tons of CO₂ equivalent per ton of product made, and (b) of the net 3 metric tons of additional CO₂ equivalent emission per ton of product made, 3% of that additional emission is attributable on a pro rata basis to carbon oxide compared to other greenhouse gas emissions (which equates to 0.060 metric tons of additional carbon oxide emitted per ton of product made). The utilization process results in the isolation of 56,000 metric tons of qualified carbon oxide, but an additional carbon oxide emission of 6,720 metric tons of carbon oxide compared to the incumbent case. F may claim section 45Q credits for a net total of 49,280 metric tons of qualified carbon oxide that was utilized.

(iii) Example 3. Assume the same facts as in Example 2 except that, of the net 3 metric tons of additional CO₂ equivalent emission per ton of product made, 16% of that additional emission is attributable on a pro rata basis to carbon oxide compared to other greenhouse gas emissions (which equates to 0.320 metric tons of additional carbon oxide emitted per ton of product made). The utilization process results in the isolation of 56,000 metric tons of qualified carbon oxide, but an additional carbon oxide emission of 35,840 metric tons of carbon oxide compared to the incumbent case. F may claim section 45Q credits for a net total of 20,160 metric tons of qualified carbon oxide that was utilized.

(iv) Example 4. Assume the same facts as in Example 2, except that the LCA report cannot reasonably determine the percentage of the additional emission that is carbon oxide compared to non-carbon-oxide greenhouse gases. The net 3 metric tons of additional CO₂ equivalent emission per ton of product equates to 336,000 metric tons of additional CO₂ equivalent emission in 2020 as a result of the utilization process. Because the 336,000 metric tons of additional CO₂ equivalent emissions produced through the utilization process is more than the 56,000 metric tons of qualified carbon oxide captured by the taxpayer, F is not allowed to claim 45Q credits in 2020.

(v) Example 5. Assume the same facts as in Example 1, except that F only captures 23,500 metric tons of qualified carbon oxide (instead of 56,000 metric tons) and, as a consequence, the utilization process results in 2,820 metric tons of carbon oxide displaced (instead of 4,480 metric tons), for a total of 27,980 metric tons of qualified carbon oxide that was utilized. Because F did not capture at least 25,000 metric tons of qualified carbon oxide as required by Section 45Q(d)(2)(A), F is not allowed to claim 45Q credits in 2020.

(vi) Example 6. Taxpayer, G, captures 39,000 metric tons of qualified carbon oxide with carbon capture equipment installed at an industrial facility in 2019. G uses the captured qualified carbon oxide for a purpose for which a commercial market exists as determined by § 1.45Q-4(a)(3). The written LCA report approved by the IRS demonstrates (a) significant CO₂ equivalent emission reductions due to lowered greenhouse gas emissions in feedstock generation, but (b) all 39,000 metric tons of the captured qualified carbon oxide are emitted at part of the utilization process. Because none of the captured qualified carbon oxide was used up to make the product, G is not allowed to claim 45Q credits in 2019.

(d) ~~Commercial market.~~—~~[Reserved].~~—

(1) Criteria. Any application for a determination described in paragraph (a)(3) (section 45Q(f)(5)(A)(iii) determination) must demonstrate that a commercial market exists for a particular identified product, explain the product and the market, describe how that product is

made or produced, and identify how qualified carbon oxide in particular is used to make or produce the product.²⁰⁰

(2) Process for determination. The taxpayer must submit a request for a section 45Q(f)(5)(A)(iii) determination to the IRS and must make public such request. In the case where a section 45Q(f)(5)(A)(iii) determination is accomplished through approval of the written LCA report, then the taxpayer shall make public the written LCA report.²⁰¹

(3) Fuels. The use of qualified carbon oxide for the purpose of making or producing a fuel is an approved utilization process under paragraph (a)(3).²⁰²

(e) *Standards of adequate lifecycle analysis. [Reserved].*

(f) Documentation. The amount of qualified carbon oxide utilized by the taxpayer under §1.45Q-1(b)(2)(ii) and (c)(2)(ii) must be documented on Form 8933 (or successor forms, or pursuant to instructions and other guidance), which must also include a statement of the date and number of any approval of a utilization process under paragraph (a)(3) as well as the approval of any written LCA report relied upon by such taxpayer.²⁰³

(g)(f) Applicability date. This section applies to taxable years beginning after [date final regulations are published in the **Federal Register**]. Taxpayers may choose to apply this section for taxable years beginning on or after ~~February 9, 2018~~ December 31, 2017²⁰⁴, 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.

²⁰⁰ See Comment 41. B.

²⁰¹ See Comment 41. D.

²⁰² See Comment 41. C.

²⁰³ See Comment 46.

²⁰⁴ See Comment 57.

Exhibit 5 (Recapture)

Suggested Revisions to NPRM § 1.45Q-5

(a) *Recapture event.* A recapture event occurs when qualified carbon oxide for which a section 45Q credit has been claimed ceases to be captured, disposed of, or ~~used as a tertiary injectant injected~~²⁰⁵ during the recapture period. Recapture events are determined separately for each project involving capture, disposal, or ~~use injection~~²⁰⁶ of qualified carbon oxide ~~as a tertiary injectant~~ (project).²⁰⁷

(b) *Ceases to be captured, disposed of, or ~~used as a tertiary injectant injected.~~* Qualified carbon oxide ceases to be captured, disposed of, or ~~used as a tertiary injectant injected~~²⁰⁸ if the leaked amount of qualified carbon oxide in the taxable year exceeds the amount of qualified carbon oxide disposed of ~~in~~ ~~secure geological storage or used as a tertiary injectant injected~~ in that same taxable year.

(c) *Leaked amount of qualified carbon oxide.* When a taxpayer ~~associated with the project~~²⁰⁹, operator of the secure geological storage site²¹⁰, or regulatory agency with jurisdiction over such site²¹¹ determines that qualified carbon oxide ~~disposed of or injected~~²¹² has leaked to the atmosphere, the ~~taxpayer appropriate party~~²¹³ 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 27916:19. The quantity determined pursuant to CSA/ANSI ISO 27916:19 must be certified by a ~~qualified independent engineer or geologist, including a statement that the quantity was determined in~~

²⁰⁵ See Comment 2. and Comment 3.

²⁰⁶ Two issues are raised by this sentence. The first is discussed in Comment 2. and Comment 3. , and directs the preferred change listed in the text. The second is that a revision is needed because of the placement of the phrase “qualified carbon oxide”, because the proposed regulation logical could allow for the possibilities of “capture of qualified carbon oxide as a tertiary injectant” and “disposal of qualified carbon oxide as a tertiary injectant”, neither of which are intended. This second issue could be remedied by rewording the sentence: “Recapture events are determined separately for each project involving qualified carbon oxide captured, disposed of, or used of qualified carbon oxide as a tertiary injectant (project).” As a better alternative, we would suggest the following simplification: “Recapture events are determined separately for each project ~~involving capture, disposal, or use of qualified carbon oxide as a tertiary injectant.~~”

²⁰⁷ We propose using the defined term “project” in § 1.45Q-5(f) below, to ensure that the recapture period is different for each project, rather than different for each taxpayer. This sentence is the first time the concept is used in § 1.45Q-5, so we propose defining “project” in this sentence.

²⁰⁸ See Comment 2. and Comment 3. and Comment 55.

²⁰⁹ This additional language is needed to limit the scope of taxpayers to only those taxpayers who are associated with the project, but to also encompass all taxpayers associated with the project.

²¹⁰ The reader could interpret “operator” broadly as the operator of the carbon capture equipment, but we believe the intent is for “operator” to be the operator of the injection site.

²¹¹ The “regulatory agency” should not be so broad as to include any federal, state or local agency that has no jurisdiction over the matter. We believe the intent is for quantification requirement to be triggered by a determination of a regulatory agency that has jurisdiction over the secure geologic storage site where the leak occurred.

²¹² See Comment 2. and Comment 3. and Comment 55.

²¹³ The person responsible for compliance with subpart RR or the ISO standard may not be “the taxpayer” described in the first phrase of the sentence. It could be the operator or some other person with responsibility under subpart RR or the ISO standard, so we suggest the actor be changed to “the appropriate party”.

~~accordance with sound engineering principles in the same manner as required in § 1.45Q-3²¹⁴. The Internal Revenue Service will consider all available facts and circumstances, and may consult with the relevant regulatory agency with jurisdiction over such site²¹⁵, in verifying the amount of qualified carbon oxide that has leaked to the atmosphere. That amount is the leaked amount of qualified carbon oxide.~~

(d) *Recaptured qualified carbon oxide.* The quantity of recaptured qualified carbon oxide (in metric tons) is the amount by which the leaked amount of qualified carbon oxide exceeds the amount of qualified carbon oxide disposed of ~~in secure geological storage or used as a tertiary injectant injected²¹⁶~~ in the taxable year.

(e): [no edits]

(f) *Recapture period.* ~~With respect to a project²¹⁷, The the~~ recapture period begins on the date of first injection of ~~qualified carbon oxide for which a section 45Q credit was claimed²¹⁹ for disposal in secure geological storage or used as a tertiary injectant is first disposed of or injected²²⁰.~~ ~~With respect to a project, The the~~ recapture period ends on the earlier of ~~five years one year²²¹~~ after the last taxable year in which ~~the a²²²~~ taxpayer claimed a section 45Q credit or the date monitoring ends under the requirements of the standards described in §1.45Q-3(b)(1) or (b)(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 disposed of ~~in secure geological storage or used as a tertiary injectant injected²²³~~ in the taxable year reported, there is no recapture amount and no further adjustments to prior taxable years are needed. 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 to be 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 disposed of ~~in secure geological storage or used as a tertiary injectant injected²²⁴~~ in the current

²¹⁴ We have proposed a number of changes to the certification required, and the independence and qualification, of the engineer and geologist described in NPRM § 1.45Q-3(d). Rather than restating those suggested revisions here, we propose to incorporate them by reference.

²¹⁵ See footnote 212.

²¹⁶ See Comment 2. and Comment 3. and Comment 55.

²¹⁷ Recapture should be analyzed and evaluated on a project by project basis. A taxpayer with access to two different secure geological storage sites should not consider the amount of qualified carbon oxide disposed of or injected at one site when determining the leaked amount of qualified carbon oxide at another site.

²¹⁸ The concept of “injection” in Section 45Q and in the proposed regulations is reserved solely for use of qualified carbon oxide as a tertiary injectant in a qualified enhanced oil or natural gas recovery project and disposed of in secured geological storage (see § 1.45Q-1(a)). The proposed revision avoids using the word “injection” to describe what the statute and proposed regulations describe solely as “disposal”. Both “disposal” and “injection” are included later in the sentence.

²¹⁹ See Comment 51.

²²⁰ See footnote 219.

²²¹ See Comment 49.

²²² There could be more than one taxpayer claiming the credit, such as multiple credit claimants.

²²³ See Comment 2. and Comment 3. and Comment 55.

²²⁴ See Comment 2. and Comment 3. and Comment 55.

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 fifth preceding year.

(3) *Multiple Units*. In the event of a recapture event in which the leaked amount of²²⁵ 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. Each taxpayer that claimed a section 45Q credit with respect to one or more of such units of carbon capture equipment is 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*. In the event of a recapture event where the leaked amount of qualified carbon oxide is deemed attributable to qualified carbon oxide with respect to which multiple taxpayers claimed section 45Q credit amounts (for example, if ownership of the carbon capture equipment was transferred, or if a taxpayer made an election under section 45Q(f)(3)(B) of the Internal Revenue Code 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 with respect to the qualified carbon oxide that the leaked amount of²²⁶ qualified carbon oxide is deemed attributable to.

(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 (or successor forms, or pursuant to instructions and other guidance) filed with that taxpayer's Federal income tax return or Form 1065 for the taxable year for which the recapture event occurred—

- (i) The recapture amount (as defined in §1.45Q-5(e));
- (ii) The ~~quantity of~~ leaked amount of²²⁷ qualified carbon oxide (in metric tons) (as defined in §1.45Q-5(c));
- (iii) The statutory credit rate(s)²²⁸ at which the section 45Q credits were originally calculated; and
- (iv) 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 ~~sequestered~~ injected²²⁹ 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 carbon dioxide injected

²²⁵ The defined term in § 1.45Q-5(c) is “leaked *amount of* qualified carbon oxide”.

²²⁶ The defined term in § 1.45Q-5(c) is “leaked *amount of* qualified carbon oxide”.

²²⁷ The “quantity of leaked qualified carbon oxide” is not defined in §1.45Q-5(c). Instead, §1.45Q-5(c) defines the “leaked amount of qualified carbon oxide”, and our suggested revision includes that term. If the intent was to instead require reporting of the “quantity of recaptured qualified carbon oxide”, then that phrase should be used, and the reference should be changed to §1.45Q-5(d). However, we suggest reporting should be required of the “leaked amount of qualified carbon oxide”.

²²⁸ In the event the LIFO approach impacts multiple taxable years, there will be multiple statutory credit rates.

²²⁹ See Comment 2. and Comment 3. and Comment 55. This change should be made to all of the examples.

during 2021 had leaked from the containment area of the reservoir and ~~will eventually migrate~~ was released²³⁰ to the atmosphere.

(B) Because the leakage determined in 2024 (10,000 metric tons) did not exceed the amount stored in 2024 (100,000 metric tons), a recapture event did not occur in 2024. A's section 45Q credit for 2024 is \$2,706,300 (net 90,000 metric tons of qualified carbon oxide captured 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 carbon dioxide injected in 2021 and 2022 have leaked and ~~will eventually migrate~~ were released²³¹ to the atmosphere. No injection of carbon dioxide takes place in 2025.

(h) *Recapture in the event of intentional removal from storage.* 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).

(i) *Limited exceptions.* A recapture event is not triggered in the event of a loss of containment of qualified carbon oxide resulting from a casualty loss outside of the control of the operator of the secure geologic storage site, and resulting from²³² actions not related to the selection, operation, or maintenance of the storage facility such site²³³, such as volcanic activity, ~~or~~ terrorist attack, or earthquakes to the extent unrelated to disposal or injection at such site²³⁴.

(j) *Applicability date.* This section applies to taxable years beginning after [date final regulations are published in the **Federal Register**]. Taxpayers may choose to apply this section for taxable years beginning on or after ~~February 9, 2018~~ December 31, 2017²³⁵, 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.

²³⁰ A "leaked amount of qualified carbon oxide" only occurs when someone "determines that qualified carbon oxide has *leaked to the atmosphere*". § 1.45Q-5(c). This means that, as long as the qualified carbon oxide stays underground and has not leaked to the atmosphere, then there can be no "leaked amount of qualified carbon oxide". We believe the intent of Example 1 was to demonstrate a situation where there was indeed a leaked amount of qualified carbon oxide under § 1.45Q-5(c) (i.e. "to the atmosphere"), but such amount did not exceed the amount of qualified carbon oxide injected in that taxable year and therefore there was no recaptured qualified carbon oxide as defined under § 1.45Q-5(d). Based on that belief, we have suggested a revision to accomplish that intent.

²³¹ The defined term in § 1.45Q-5(c) is "*leaked amount of qualified carbon oxide*".

²³² See Comment 52.

²³³ See Comment 35.

²³⁴ See Comment 52.

²³⁵ See Comment 57.