



KPMG report: Clean fuel production credit under section 45Z

Analysis and observations on
Notices 2025-10 and 2025-11

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The U.S. Treasury Department and IRS in January 2025 published Notice 2025-10, providing a draft of forthcoming proposed regulations, and Notice 2025-11, providing an emissions rate table, to assist entities claiming a clean fuel production credit under section 45Z. As of the date of publication, proposed regulations have not been published in the Federal Register. This report provides a high-level summary of the notices and observations.

Section 45Z

Overview of the credit

Enacted by Pub. L. No. 117-169, commonly known as the “Inflation Reduction Act of 2022” (IRA), the section 45Z clean fuel production credit is a general business credit under section 38 that is allowed with respect to clean transportation fuel produced domestically after December 31, 2024, and sold by December 31, 2027. Eligible fuels are generally classified as either sustainable aviation fuel (SAF) or non-SAF transportation fuel.

To qualify for the credit in a given tax year, a taxpayer must be registered by the IRS and produce a qualifying transportation fuel from an allowable feedstock for sale to an unrelated person for an allowable purpose.¹ The transportation fuel must have a “well to wheel” lifecycle greenhouse gas (GHG) emissions rate of no greater than 50kg CO₂ per mmBTU. The credit amount is higher when the emissions rate is lower.

The section 45Z credit is calculated by multiplying the volume of qualifying transportation fuel produced (in gallons or gallon equivalent) by a base rate, referred to as the “applicable amount,” and an “emissions factor.” The applicable amount is \$0.20 for non-SAF transportation fuel and \$0.35 for SAF (or \$1.00 and \$1.75, respectively, if the taxpayer satisfies prevailing wage requirements under section 45).² The applicable amount is inflation-adjusted for years after 2024.³ The emissions factor is inversely proportional to the lifecycle GHG emissions potential of the fuel produced and generally determined by applying an emissions rate provided annually in a table (the “Annual Table”).⁴

Recently published guidance; call for comments

Notice 2025-10 is an announcement of the intent to publish a notice of proposed rulemaking regarding the proper application by taxpayers of the various aspects of the section 45Z credit. Although the publication is *not* a notice of proposed rulemaking and *does not* carry the same authoritative weight as would a notice of proposed rulemaking, Treasury and the IRS provided a draft text of proposed regulations, which are attached as an Appendix to Notice 2025-10 (“forthcoming proposed regulations”). The notice and forthcoming proposed regulations offer a view into the IRS’s perspectives regarding key facets of the credit under 45Z.

The notice indicates the IRS is continuing to consider, and therefore provides no guidance, with respect to:

- Calculating additional reductions to lifecycle GHG emissions for climate smart agriculture (CSA) practices

¹ Related party determinations are, for this purpose, made under §52(b).

² See TD 9998, 89 FR 53184 (June 25, 2024), for prevailing wage and apprenticeships requirements.

³ IRC § 45Z(c)(1).

⁴ Specifically, the emissions factor is calculated as the “quotient of an amount equal to 50 kilograms of CO₂e per mmBTU, minus the emissions rate for such fuel, divided by 50 kilograms of CO₂e per mmBTU.” See: §45Z(b)(1)(A)(i). Notice 2025-11 provides the first Annual Table.



- Developing a pathway for imported used cooking oil (UCO) that originates from a source outside the United States and/or is purchased from an aggregator located outside the United States
- Procedures to submit a petition for a provisional emissions rate (PER) if the applicable emissions rate table does not establish the type and category of transportation fuel produced by a taxpayer
- The need for an anti-abuse rule to address potential abuse of the section 45Z credit where transportation fuel is produced and sold in a manner that is inconsistent with the statutory purpose

The notice includes a formal request for comments on the forthcoming proposed regulations and fuel pathways and production processes not addressed in the notice.⁵

Notice 2025-11 provides the first Annual Table used to determine lifecycle GHG emissions for specified fuels and feedstocks under section 45Z and is intended to be authoritative. As discussed below, the table within Notice 2025-11 provides determinations developed on the basis of a “45ZCF-GREET model” developed for non-SAF transportation fuel and two variations of a “CORSIA” model applicable to SAF.

The table within Notice 2025-11 is applicable to non-SAF transportation fuel produced within a tax year beginning upon or after the publication of the notice and until a subsequent table or other modifying guidance is provided.

The notice also includes a formal request for comments on all aspects of the notice. Comments from taxpayers and other interested parties are due by April 10, 2025.⁶

Notice 2025-10, announcing intent to propose regulations regarding 45Z

Transportation fuel; treatment of electricity and gases

Section 45Z requires transportation fuel to be suitable for use as a fuel in a highway vehicle or aircraft. In the forthcoming proposed regulations, a “fuel” is “suitable for use” if it either:

- Has practical and commercial fitness for use as a fuel in a highway vehicle or aircraft, or
- May be blended into a fuel mixture that has practical and commercial fitness for such use.

This definition is met even if use in a highway vehicle or aircraft is not the predominant use of the fuel but is not met for merely possible or rare uses. In addition, the definition is met at the point at which no further production, refinement, or other step is necessary before the fuel is sold in a “qualifying sale.” A fuel need not actually be used as a fuel in a highway vehicle or aircraft to meet the definition.

“Fuel” is defined as any liquid or gaseous substance that can be consumed to supply heat or power. Thus, electricity is excluded from the definition of fuel.⁷ To clarify the application of section 45Z to gases, the notice acknowledges that gaseous substances may vary widely in their volume. Because the credit is

⁵ This opportunity to offer comments is separate from and additional to any window for comments that would be offered subsequent to the issuance of a Notice of Proposed Rulemaking in accordance with the Administrative Procedures Act.

⁶ Taxpayers and other interested parties may make comments via the federal portal until April 10, 2025:
<https://www.regulations.gov/docket/IRS-2025-0002>

⁷ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-1(b)(15)



calculated on the basis of a gallon produced, the forthcoming proposed regulations provide a gallon-equivalent calculation for “non-liquid fuels”⁸ based on an energy equivalent to a gallon of gasoline.⁹

KPMG observation

The “suitable for use” definition mirrors longstanding taxable fuel excise tax regulations. It clarifies that a transportation fuel is suitable for use at the point it requires no further processing even though it may need to be blended with taxable fuel to be usable in a highway vehicle or aircraft. A similar clarification is provided for conventional or alternative natural gas (CANG).

Qualifying sale to an unrelated person in an allowable manner

Section 45Z requires the transportation fuel to be sold by the producer to an unrelated person in a qualifying sale and lists three types of such sales: for use by the purchaser in the production of a fuel mixture; for use by the purchaser in its trade or business; or for resale by the purchaser in a retail sale and delivery into the fuel tank of an end-user.¹⁰

The forthcoming proposed regulations define use in a trade or business to mean use *as a fuel* in a trade or business *within the meaning of section 162*. However, qualifying sale *does not* include sale for blending or further processing, including for subsequent use as a feedstock in another fuel.¹¹ The notice provides an example of a qualifying sale related to ethanol to SAF production to illustrate a sale for subsequent use as a feedstock in another fuel. In the case of a consolidated group of corporations, a sale to another member of an affiliated group will be deemed to be a sale to an unrelated person if such fuel is ultimately sold to an unrelated person.¹² The qualifying sale may take place no earlier than the date the fuel is produced.¹³

KPMG observation

No definition of the term “fuel mixture” is provided. Although IRS guidance related to now-expired alternative and renewable fuel excise tax incentives defines the term mixture, it is unclear whether the IRS intends to adopt the same definition.¹⁴ It is also unclear how the addition of the language “use *as a fuel* in a trade or business *within the meaning of Section 162*” may affect sales to distributors. In addition, there is uncertainty whether advance contracts were intended to be affected by a requirement to make a qualifying sale after production.

⁸ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-1(b)(16)(ii) provides that: “A fuel is considered a non-liquid fuel if it is in a gaseous state at ambient pressure and temperature of 1 atmosphere and 60 degrees Fahrenheit.”

⁹ This is stated to be the amount of the given fuel whose “lower heating value” would have a Btu content of 116,090. “Lower Heating Values” are provided for several example gaseous fuels. See Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-1(b)(16)

¹⁰ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-1(b)(25)

¹¹ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-1(b)(25)(iii)

¹² Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-1(b)(25)(iii)

¹³ Noticed 2050-10, Appendix – Forthcoming Prop. Reg. §1.45Z-2(b)

¹⁴ See, Notice 2007-37, 2007-17 I.R.B. 1002, Notice 2006-92, 2006-43 I.R.B. 774.

Registered producers, qualified facilities and ownership rules

Producers and production

The section 45Z credit is claimed by the “producer” of a qualifying transportation fuel. The forthcoming proposed regulations define producer as, generally, the person that engages in the “production” of a transportation fuel.¹⁵

Production is defined as all steps and processes used to make a transportation fuel. Production, which must occur in the United States—

- Begins with the processing of primary feedstock(s) and ends with a transportation fuel ready to be sold in a qualifying sale
- Must involve substantial processing by the producer
- Does not include instances in which a person engages in minimal processing, such as blending a fuel mixture or otherwise engaging in activities that do not result in a chemical transformation or instances where a person uses a primary feedstock to produce a fuel that meets the same ASTM standard as the primary feedstock¹⁶

A series of examples illustrates that activities such as blending, dehydrating, and introducing stabilizing additives are considered minimal processing and thus are not production.

For alternative natural gas, including RNG, a special rule provides that the producer is the person that processes the alternative natural gas (i.e., the processor) to remove water, carbon dioxide, and other impurities such that it is interchangeable with fossil natural gas.¹⁷ The notice explains that this definition would exclude any person that removes CANG from a pipeline, compresses it further after removal, and then sells such further-compressed CANG (i.e., the compressor) because compression is not a chemical transformation, and the compression process is minimal processing.¹⁸

The producer must be registered by the IRS in advance of production.¹⁹ Each business unit that is a producer of clean fuel that has, or is required to have, a separate employer identification number (EIN), including disregarded entities, must register separately.²⁰ A registered producer must notify the IRS of any changes in the information submitted to the IRS, including, but not limited to changes in ownership, address, and business activities.²¹ The forthcoming proposed regulations allow a safe harbor to claim the section 45Z credit as of the date the IRS has received the application for reregistration, even if the IRS has not yet approved the reregistration.²²

¹⁵ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-1(b)(22)(i)

¹⁶ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-1(b)(23)

¹⁷ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-1(b)(22)(ii)

¹⁸ Notice 2025-10, section 3.03(4)(b)

¹⁹ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-1(b)(30); see also Notice 2024-49 (describing the registration application process on Form 637, Application for Registration (For Certain Excise Tax Activities)). A producer of transportation fuel is not considered registered for purposes of section 45Z until the IRS has issued a “Registration Letter.”

²⁰ Notice 2025-10 – Appendix – Forthcoming Prop. Reg. §1.4101-1(a)

²¹ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.4101-1(g)(1)(iii)

²² Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.4101-1(a)(3)(iii)

KPMG observation

The reregistration safe harbor will provide welcome continuity and certainty. Nevertheless, registration is a condition to allowance of the section 45Z credit and taxpayers will need to be mindful of the requirement to notify the IRS of changes in ownership, address, and business activities. Currently, the term "business activities" is not defined; thus, to the extent it includes any and all changes to feedstocks, processes, or any other information provided to the IRS in connection with the original application, such notification requirement could present an administrative burden.

Qualified facilities

Under section 45Z, a registered producer must produce the transportation fuel at a "qualified facility." Qualified facility means a "facility" used for the production of transportation fuel, except it excludes a facility for which an anti-stacking credit is allowed for the tax year.²³

In the forthcoming proposed regulations, facility is defined as a single production line that is used to produce a transportation fuel. For this purpose, "a single production line includes all components that function interdependently to produce a transportation fuel through a process that results in the lifecycle greenhouse gas emissions rate used to determine the credit." Components function interdependently "if the use of each component is dependent upon the use of each of the other components to produce a transportation fuel."²⁴ The forthcoming proposed regulations specify that components may be deemed to function interdependently even if they are not located in the same building or geographic proximity to other components. For example, a facility may include "carbon capture equipment if such carbon capture equipment contributes to the lifecycle greenhouse gas emissions rate of the process by which the transportation fuel" is produced.

Further, it is noted that a single production line includes "all steps of the production process from the processing of feedstock through to the transportation fuel that is sold." However, it does not include conditioning, blending, or transportation equipment. In addition, it does not include feedstock-related equipment or electricity production equipment used to power the transportation fuel production process, including any carbon capture equipment associated with the electricity production process.

The forthcoming proposed regulations provide that the anti-stacking rules will be applied on a tax year and per-facility basis.²⁵

KPMG observation

This definition of facility aligns with the definition provided in other IRA credits. At the outset of a project, it is an important matter to determine where the boundaries of the facility are, as the determination informs beginning of construction, applicability of prevailing wage and apprenticeship rules, and anti-stacking rules. Notably, upstream feedstock production equipment and downstream transportation assets are not part of the facility. Taxpayers seeking to claim multiple credits with respect to related activities, whether or not co-located, will need to carefully consider this guidance. It is also important to define the boundaries of a facility to define which assets are subject to the ongoing prevailing wage requirements for a taxpayer to achieve the increased credit rate.

²³ Section 45Z cannot be claimed for a facility for the tax year if the facility is allowed a section 45V credit for clean hydrogen production (or an ITC in lieu of the section 45V credit) or the section 45Q credit for carbon oxide sequestration.

²⁴ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-1(b)(14)

²⁵ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-4(b)(2)

Ownership of a facility

The forthcoming proposed regulations specify that taxpayers do not need to have an ownership interest in a qualified facility to claim a credit under section 45Z. In the instance that a taxpayer does not own the facility, the taxpayer producing the fuel is entitled to the credit. If multiple taxpayers produce transportation fuel at a qualified facility, the credit will be allocated in proportion to each party's respective interest(s) in the gross sales of the produced transportation fuel as determined under an "applicable contract or legal arrangement."²⁶

In the case of a facility owned by multiple persons (other than a partnership), facility production for purposes of calculating a credit benefit under section 45Z is allocated on the basis of the parties' respective interests in the gross sales from the facility.²⁷ If an entity makes a valid election under section 761(a), each member's interest in the facility will be treated as a separate facility owned by the given member.

KPMG observation

The ownership rules provide welcome flexibility under section 45Z. However, taxpayers should note that the restriction on "stacking" credits will apply to the given facility irrespective of its ownership.

Procedural requirements

Filing, recordkeeping, and substantiation

Taxpayers claim the section 45Z credit by attaching to their income tax return a separate Form 7218, *Clean Fuel Production Credit*, for each facility. The forthcoming proposed regulations require taxpayers to maintain records sufficient to establish eligibility to claim a credit under section 45Z, as well as the amount of credit claimed. These requirements are generally complementary and supplementary to the registration and certification requirements under the credit. Minimum requirements include documentation regarding the feedstocks used to produce the transportation fuel.

Among other requirements, for SAF, taxpayers will need to obtain certification of the emissions rate, as described below. For non-SAF transportation fuels, a safe harbor is provided to substantiate emissions rates.²⁸

Certification of emissions rates and applicable models

Taxpayers producing SAF must obtain a detailed certification from a "qualified certifier" third party regarding their production of SAF, which they must then submit as an attachment to their Form 7218.²⁹ The third party must certify that the producer of SAF complies with either the most recent Carbon Offsetting and Reduction Scheme for International Aviation which has been adopted by the International Civil Aviation Organization with the agreement of the United States (CORSIA), or any similar methodology which satisfies the criteria under section 211(o)(1)(H) of the Clean Air Act (42 U.S.C. 7545(o)(1)(H)), as in effect upon the enactment of the IRA.³⁰

²⁶ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-4(d)

²⁷ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-4(c)(1)

²⁸ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-4(e)(2)

²⁹ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-5(a).

³⁰ IRC § 45Z(b)(1)(B)(iii)

Generally, this certification should contain the information necessary to establish that the qualified facility produces the given transportation fuel in accordance with the lifecycle-emissions-based regime for determining eligible transportation fuels under section 45Z, including alignment with the intended application of the applicable model.³¹ Notice 2025-10 guides taxpayers in identifying qualified certifiers for a particular model, who are generally entities accredited by state and industry bodies for similar purposes. Notice 2025-10 specifies several emissions evaluation models as key to the administration of section 45Z. The notice introduces the 45ZCF-GREET model—developed by the Argonne National Laboratory and published by the Department of Energy—as the model that producers of non-SAF fuels listed in the Annual Table.³² Producers of SAF apply the 45ZCF-GREET model or one of two specified CORSIA models.³³

Producers of an otherwise eligible fuel not listed in the annual table, or created using an eligible feedstock not accounted for within the table, may petition the IRS for a provisional emissions rate (PER) determination, under a procedure yet to be specified.³⁴ Notice 2025-11 states that Treasury and the IRS intend to provide guidance regarding the PER petition procedure and will not accept petitions until such guidance is published.³⁵

KPMG observation

Helpfully, the IRS has indicated that CARB LCFS verifiers are qualified certifiers for the 45ZCF-GREET model. It remains to be seen how taxpayers will move forward if they do not have a production process that is currently covered by the 45ZCF-GREET model, given that the lack of a PER process creates uncertainty. Consequentially, taxpayers are uncertain about whether the calculation of an emissions rate, absent the PER process, will be consistent with future guidance.

Notice 2025-11, providing initial guidance on emissions rates under section 45Z

Notice 2025-11 provides the first Annual Table guiding taxpayers in assessing emission for listed fuels and feedstocks, listing the “most commonly used types and categories” of transportation fuel that are “anticipated to meet the eligibility requirements” under section 45Z.³⁶ The table lists eight fuel types—Ethanol; Biodiesel; Renewable Diesel; Renewable Natural Gas; Propane; Naphtha; Hydrogen; and SAF—produced using roughly a dozen potential pathways and dozens of primary feedstocks.

In most instances, taxpayers are directed to apply the 45ZCF-GREET model described above, although producers of Hydrogen fuels are directed to apply 45ZCF-GREET in combination with the 45VH2-GREET model. Producers of SAF using HEFA, ATJ, and Gasification and Fisher-Tropsch pathways are afforded the option of selecting either the 45ZCF-GREET, CORSIA Default, or CORSIA Actual models. Producers of SAF using other pathways and feedstocks established under one of the CORSIA models must apply such model.

Notice 2025-11 provides some additional guidance in applying these models. In general, taxpayers are required to use the most recent available version of the applicable model. If a new version is published in

³¹ Notice 2025-10, Appendix – Forthcoming Prop. Reg. § 1.45Z-5(b)(i-vii)

³² Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-2(e)(3)(i)

³³ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-2(e)(3)(iii)

³⁴ Notice 2025-10, Appendix – Forthcoming Prop. Reg. §1.45Z-2(d; f)

³⁵ Notice 2025-10, Section 4.06

³⁶ Notice 2025-11, Section 4.01; Appendix



a given year, taxpayers may choose to apply either the new or old version.³⁷ However, should the 45ZCF-GREET model add a type or category of fuel after the first day of a tax year, taxpayers must use such version for the entire tax year with respect to that category or type.³⁸ When calculating emissions rates according to these methodologies, the notice directs taxpayers to submit all inputs to the model and follow the publicly available instructions provided by the authority that developed the model.³⁹

Conclusion

Treasury and the IRS faced a tight deadline to release this guidance. While questions and ambiguity remain, the notices offer direction to producers of transportation fuel intending to claim the section 45Z clean fuel production credit.

³⁷ Notice 2025-10, Section 4.01-2

³⁸ Notice 2025-10, Section 4.01

³⁹ Notice 2025-10, Section 4.05. The DOE has published on its website Guidelines to Determine Life Cycle Greenhouse Gas Emissions of Clean Transportation Fuel Production Pathways Using 45ZCF-GREET.



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