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Proposed regulations providing guidance on clean fuel production credit

Overview of section 45Z and key aspects of the proposed regulations

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On February 4, 2026, the Treasury Department and IRS published proposed regulations under section 45Z in the Federal Register (91 FR 5160) to provide guidance on the clean fuel production credit ("45Z credit"). This article provides an overview of section 45Z and a discussion of key aspects of the proposed regulations, as well as a brief primer on using the 45ZCF-GREET model to clarify some of the revised rules.

Overview

The 45Z credit is a production tax credit enacted under the Inflation Reduction Act of 2022 (IRA) that is designed to consolidate and replace certain pre-IRA credits for biodiesel, renewable diesel, and alternative fuels, and incentivize domestic production of both sustainable aviation fuel (SAF) and non-SAF fuels. The amount of the credit is based on the lifecycle greenhouse gas emissions rate ("emissions rate") of the fuel. The credit was amended and extended by two years in the One Big Beautiful Bill Act (OB3). As a result, the 45Z credit is available for fuels produced after December 31, 2024, and sold before December 31, 2029.

Generally, the 45Z credit is allowable to the registered producer of transportation fuel that is "suitable for use" in a highway vehicle or aircraft; that is, it must have practical and commercial fitness for use in a highway vehicle or aircraft. In addition, the transportation fuel must have an emissions rate of less than 50kg of CO2e per mmBTU. The emissions rate calculation is based on the most recent Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) methodologies adopted by the International Civil Aviation Organization ("ICAO") for SAF or the Greenhouse gases, Regulated Emissions, and Energy use in Transportation model developed by Argonne National Laboratory (GREET model) or a successor model (as determined by the Secretary), for non-SAF transportation fuel. Under prior guidance, Treasury determined that the 45ZCF-GREET model issued by the Department of Energy ("DOE") is the proper successor model. Transportation fuel that meets the suitability and emissions rate requirements must also be sold to an unrelated person in a qualified sale, as defined in the statute. Generally, the sale must be made to an unrelated purchaser that uses the fuel to produce a mixture, uses the fuel in its trade or business, or sells the fuel at retail.

Key aspects of the proposed regulations

Registered producers

Generally, section 45Z requires the producer of transportation fuel to be registered under section 4101. Registration must be in effect at the time of production for the fuel to qualify for the credit; therefore, this aspect of compliance is foundational to qualifying for the credit. Under the proposed regulations, registration is required at the entity level, including disregarded entities. However, because the producing entity may not file an income tax return, the proposed regulations, consistent with prior guidance, describe several situations in which a person other than a registered producer of transportation fuel may claim the credit. For example, an owner of a disregarded entity that is a registered producer can be treated as the registered producer for purposes of claiming the credit. A similar rule applies to an S corporation that owns a Qsub and an agent for a consolidated group.

A transportation fuel producer applies for registration using Form 637 "Application for Registration (For Certain Excise Tax Activities)," using the appropriate activity letter and following all instructions. Activity letter CA is used by producers of SAF and CN by producers of non-SAF.

Anti-stacking rule and facility definition

Section 45Z requires that fuel be produced in the United States at a qualified facility. A qualified facility is a facility for which no credit was claimed under section 45V or section 45Q, or for which no election was made under section 48(a)(15) (pertaining to specified clean hydrogen production facilities) (anti-stacking rule).

The proposed regulations clarify the scope of the physical facility, narrowly defining it as a single production line that produces a transportation fuel, including all components that function interdependently to produce a transportation fuel.

The definition considers that a section 45Z facility may be co-located with another credit-eligible facility, and that some production equipment may be located upstream or downstream from, or in a different building than, other equipment.

Finally, the proposed regulations clarify that facility ownership is not required, resulting in production by multiple taxpayers at a single facility. The proposed regulations provide rules for both situations.

Suitable for use / qualified sale

One of the most important changes in the proposed regulations had been overwhelmingly requested by stakeholders in response to prior guidance. Specifically, Treasury had previously interpreted the term “sold for use in a trade or business” to mean "sold for use *as a fuel* in a trade or business." Stakeholders were concerned that this interpretation would exclude sales for resale, such as those to intermediary dealers or wholesalers, which make up a large part of the market, from qualifying for the section 45Z credit. Stakeholders noted the "use as a fuel" restriction was contrary to the plain language of the statute and the intention to incentivize domestic production of transportation fuel that is "suitable for use" – but not required to be used – in a highway vehicle or aircraft.

The proposed regulations adopted the suggestion to remove the “use as a fuel” language from the definition of “sold for use in a trade or business.” Now, the proposed regulations explicitly clarify that the term “sold for use in a trade or business” includes the sale of fuel to an unrelated person that subsequently resells the fuel in its trade or business. In addition, eliminating any "use as a fuel" restriction means that fuel that otherwise qualifies as transportation fuel can be sold for resale for any purpose. For example, the fuel can be sold for electricity generation, industrial processes, heating, and manufacturing (e.g., creating plastics).

Sales to related parties

OB3 gave the Secretary authority to prescribe rules, outside the context of an affiliated group of corporations, where a taxpayer sells fuel to a related party who then sells fuel to an unrelated party.

The proposed regulations provide that a taxpayer will be treated as selling fuel to an unrelated person if such fuel is sold to the unrelated person by a related person. Persons are treated as related to each other if such persons are under common control and would be treated as a single employer under regulations prescribed under section 52(b) of the Code.

Sales before production

The proposed regulations provide a rule to clarify that a transportation fuel may be produced in an earlier tax year than the tax year in which the qualified sale of the fuel occurs. In such situations, the proposed regulations state that the qualified sale would occur on the date of production.

Sales from common storage

The proposed regulations add a rule to address situations where a taxpayer sells transportation fuel that is held in common storage with other fuels that have different emissions rates. In these situations, the proposed regulations state that the taxpayer is treated as selling a pro rata portion of each fuel produced after December 31, 2024, and held in such common storage.

Primary feedstock and foreign feedstock restriction

OB3 added a restriction that any fuel “produced from a fuel for which a section 45Z credit is allowable” is not transportation fuel. The proposed regulations would define the term “produced from a fuel for which a section 45Z credit is allowable” to mean that a fuel has a primary feedstock that meets the definitions of a transportation fuel under section 45Z (without regard to section 45Z(d)(5)(A)(iv)).

This rule ensures that only the first transportation fuel in a production chain qualifies for a section 45Z credit. Thus, if one fuel is used as a primary feedstock to produce a second fuel, and the first fuel qualifies as a transportation fuel for purposes of section 45Z, the second fuel would not qualify for a section 45Z credit. The proposed regulations provide as an example ethanol that is used to produce a synthetic blending component under ASTM D7566, Annex A5 (ATJ-SPK). In the example, only the ethanol would qualify for the 45Z credit.

However, a fuel could still qualify for a section 45Z credit if its production process uses a transportation fuel solely as a process fuel or other non-primary-feedstock input. In other words, the prohibition applies if a transportation fuel is used as the primary feedstock, but not if it is used other than as a primary feedstock.

OB3 also added a restriction on the use of foreign feedstocks (i.e., feedstocks from sources other than the US, Mexico, or Canada) for transportation fuels. The proposed regulations state that Treasury remains concerned about the ability to reliably distinguish between imported used cooking oil ("UCO") and palm oil, which are common feedstocks for biofuels, so they are considering appropriate substantiation and recordkeeping requirements for feedstocks imported from Canada and Mexico. Treasury requested comments to address these concerns.

ASTM specifications and undenatured ethanol

Prior guidance seemed to provide an exclusive list of transportation fuels, requiring specific ASTM specifications. The proposed regulations clarify that listed ASTM specifications would be both non-exhaustive and non-exclusive with respect to determining whether a fuel is a transportation fuel for purposes of section 45Z.

The preamble to the proposed regulations states that prescribing exclusive fuel-by-fuel specifications in these proposed regulations would be impractical and may unintentionally restrict future market developments.

Among other things, the proposed regulations clarify that the term low-GHG ethanol includes the ASTM specification for both denatured and undenatured ethanol.

Renewable natural gas (RNG)

The proposed regulations appear to be very favorable to RNG producers. Production for RNG purposes includes taking untreated RNG and removing water, CO2, and other impurities to make the RNG interchangeable with fossil natural gas.

Pipeline quality RNG that is interchangeable with fossil natural gas and requires only minimal processing to meet the specs of ASTM D8080 can qualify for 45Z if it is injected into a pipeline for resale and distribution. The customers who purchase such RNG can be dealers, distributors, retailers, or end users of fuel. If the RNG is produced via anaerobic digestion and biogas upgrading with animal manure feedstocks, the emissions rate may be negative, resulting in a credit amount higher than $1 per gallon equivalent.

RNG qualifies as a transportation fuel if it is later used as a process input to produce another transportation fuel (e.g., RNG used to create electricity for use in fuel production or used as process heat to create another fuel).

Currently 45ZCF-GREET only allows use of RNG as a process input if it is directly supplied (i.e., through a direct pipeline connection to a supplier of natural gas alternatives or documentation of other physical methods of exclusive delivery).

Calculating emissions rates

The proposed regulations confirm that the 45ZCF-GREET model is the successor model to the GREET model and the sole appropriate model to calculate carbon intensity ("CI") scores for non-SAF transportation fuel for purposes of the 45Z credit. The preamble specifies that the R&D GREET model, for example, cannot be used to calculate a CI score for non-SAF transportation fuel.

As required by the statute, the proposed regulations clarify that Treasury and the IRS will annually publish an emissions rate table for each calendar year in the Internal Revenue Bulletin. The table will include various types and categories of fuel and fuel pathways and will direct the taxpayer to the proper model to calculate its CI score. The annual emissions rate table for calendar year 2025 was published in Notice 2025-11.

Negative emissions rates

OB3 added a general rule that prohibits negative emissions rates for transportation fuels, except for transportation fuels derived from animal manures.

The proposed regulations clarify that a negative emissions rate is not allowed for transportation fuels used as process inputs. However, the proposed regulations seem to leave the door open for negative emissions rates with respect to non-transportation fuel process inputs.

Energy attribute certificates (EACs) and incrementality

The proposed regulations provide a clunky rule to address situations where a transportation fuel producer purchases EACs to lower their CI score. Generally, rules similar to the rules under section 45V apply with respect to the purchase of EACs, and the section 45V final regulations require that EACs meet the Three Pillars of (1) deliverability, (2) temporal matching, and most importantly (3) incrementality. The incrementality rule is designed to ensure that EACs represent electricity generation produced from new or more recent energy generation sources. This rule, in the context of 45V, is designed to ensure that a hydrogen producer's new demand on the grid (e.g., from an electrolyzer) is genuinely offset by new clean energy rather than simply reshuffling existing clean power away from other users and causing fossil plants to fill the void. That is, if EACs were simply purchased from plants that were already running, no new clean power has been added to the grid, and the hydrogen facility's new electricity demand would ultimately end up being served by fossil fuel plants ramping up to fill the gap.

The proposed rule states that when applying the incrementality rules under the 45V final regulations for purposes of the 45ZCF-GREET model, a taxpayer’s facility is considered placed in service in the first tax year it produces a transportation fuel.

Thus, the electricity-generating facility that produced the unit of electricity to which the EAC relates must have a commercial operations date (COD) that is no more than 36 months before the first day of the tax year that the transportation fuel facility first produced a transportation fuel.

This particular rule is part of a provision in the proposed regulations relating to calculation of emissions rates (i.e., Prop. Reg. 1.45Z-2(e)) that applies to qualified sales occurring in tax years ending on or after January 10, 2025, so it is intended to be retroactive.

Provisional emissions rate (PER)

The proposed regulations establish the procedures a taxpayer must follow to request a PER determination. The proposed regulations would require a taxpayer to submit an emissions value request ("EVR") to the DOE and obtain a calculated emissions value letter ("CEVL") from the DOE, prior to filing a PER petition, similar to the PER process under section 45V.

Climate Smart Agriculture (CSA)

Treasury anticipates that certain CSA practices will be accounted for in the upcoming revision to the 45ZCF-GREET model. The plan is that the U.S. Department of Agriculture ("USDA") will finalize a version of their Feedstock Carbon Intensity Calculator (FD-CIC) that allows for quantifying changes in soil carbon stocks and nitrous oxide emissions, upstream emissions from fertilized production, and carbon dioxide emissions from on-farm energy consumption. Then, a 45Z-specific version of this calculator will be incorporated into DOE's 45ZCF-GREET model. Treasury anticipates that this 45Z-specific calculator may be used for fuel produced and sold in 2025.

This means that if biofuel can be traced to feedstocks that were grown using CSA practices, this data can be accounted for in the upcoming 45ZCF-GREET model. It is expected that CSA data would ultimately result in a lower CI score, and therefore, a potentially higher credit amount.

Two safe harbors

The proposed regulations provide a safe harbor for substantiating the emissions rate for non-SAF transportation fuel. The emissions rate must be verified by a qualified certifier, similar to the statutory requirement for SAF certifications. The proposed regulations provide a model certification to use for substantiation.

The proposed regulations also provide a safe harbor to substantiate a qualified sale. It is unclear in what context this would prove beneficial, because the proposed regulations broaden the scope of qualified sale to include sales to intermediaries, such as wholesalers, dealers, and resellers. As noted above, it also clarified that the fuel does not have to be sold for use as a fuel to qualify for the credit. Nevertheless, given the uncertainty regarding qualified sales prior to the issuance of the proposed regulations, use of the safe harbor would provide certainty.

Amendments to existing regulations under sections 6417 and 6418

The proposed regulations contain amendments to final regulations promulgated under sections 6417 and 6418 to clarify that sections 45Z and 45(d)(3)(C) do not require a taxpayer to own the underlying eligible credit property.

Applicability dates and reliance

Except for the proposed effective date relating to calculation of emissions rates, as noted above, the proposed regulations are generally applicable to qualified sales occurring in tax years ending on or after the date of publication of the final regulations.

For calendar year taxpayers, the proposed regulations generally won't apply to their 2025 tax year. However, taxpayers may rely on the proposed regulations until final regulations are published in the Federal Register, provided taxpayers follow them in their entirety and in a consistent manner.

45ZCF-GREET model primer

As noted, the proposed regulations are clear that taxpayers producing non-SAF transportation fuels are generally required to use the 45ZCF-GREET model to compute carbon intensity for purposes of computing the 45Z credit. The 45ZCF-GREET model requires taxpayers to enter information about the fuel produced, and feedstock and process inputs used, including natural gas, electricity, and other items relevant to computing carbon intensity. A sample 45ZCF-GREET model input screen is copied below:

45ZCF-GREET

Select a Technology

Ethanol from Corn via Fermentation	Generate LCA Results

Products (per period of operation)

Parameter	Sample Input	User Input	Unit
Ethanol Production	1.0		million gallons

Process Inputs (per period of operation)

Parameter	Sample Input	User Input	Unit
Feedstock: Corn	0.3		million bushel
Fossil Natural Gas	22.4		thousand MMBtu
Pipeline CMM	0.0		thousand MMBtu
45Z Modeled RNG	0.0		thousand MMBtu
45Z Modeled RNG CI	23.3		g CO_2e/MJ
Coal	4.2		short ton
Agricultural Residue Input	0.0		wet short ton
Agricultural Residue Moisture Content	12%		percentage
Electricity: Grid Electricity	0.6		million kWh
Imported Renewable Electricity: Energy Attribute Credit (EAC)	0.0		million kWh
Onsite Behind-The-Meter Electricity (BTM): EAC	0.0		million kWh

Selections (per period of operation)

Parameter	User Selection	Input Type
Needs Region Electricity Source	1	Selection
Enable/Disable Carbon Capture and Sequestration (CCS) for Grain Ethanol	1	Selection
Coal Type: 1 - Bituminous, 2 - Subbituminous, 3 - Lignite	1	Selection

Once the taxpayer has entered all of the relevant information into the model, the “Generate LCA Results” button will provide the relevant emissions rate(s). It is important to note that the taxpayer can only input the fields shown on the initial screen, known as “foreground data.” Foreground data includes feedstock type, type and quantity of energy used for transportation fuel production (e.g., electricity, RNG, hydrogen), quantity of transportation fuel and other liquid fuels produced, transportation modes and distances for the finished transportation fuel required to transport the fuel to its point of use.

The 45ZCF-GREET model is pre-programmed with certain “background data” that represents assumptions made by the creators of the model and cannot be modified by the user. Background data includes direct emissions at soybean crushing facilities, methane leakage rates for natural gas supply chain, fuel efficiency and CO2 emissions factors for individual transportation modes, ILUC and other data.

The 45ZCF-GREET model was initially released in January 2025. In May 2025, an updated version was released, and then further amended. Among other computational and presentational changes, these updates also expanded available fuel pathways to include wet mill ethanol and renewable natural gas produced from coal mine methane.

Summary and conclusion

The proposed regulations under section 45Z mark a major advancement in clarifying eligibility, compliance, and operational requirements for the clean fuel production credit. Taxpayers and advisers should carefully review the new guidance to align their practices with both statutory and regulatory expectations.

Despite the additional clarity provided by the proposed regulations, several unresolved issues continue to present challenges for taxpayers and advisers. The exclusion of imported feedstocks, including used cooking oil sourced outside North America, remains a significant obstacle for producers who rely on global supply chains, and the process for substantiating feedstock origin from Canada or Mexico is not yet fully defined. Further, the formalization of the PER process, while helpful, introduces additional complexity and may result in delays for those seeking credit determination for fuels not listed in the emissions rate table. The anti-stacking rules, which prevent taxpayers from claiming Section 45Z credits alongside other energy credits for the same facility, raise questions about their practical application in multi-credit projects. The IRS is actively seeking public input on substantiation methods, the PER process, and the treatment of related-party sales, and practitioners should monitor future guidance and participate in the comment process to help resolve these outstanding issues.

As the section 45Z regime continues to develop, proactive planning and diligent compliance will be critical for optimizing the benefits of the clean fuel production credit while minimizing risk. The IRS has scheduled a public hearing for May 28, 2026, and taxpayers are encouraged to submit comments and participate in the rulemaking process.

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