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December 3, 2022

Internal Revenue Service
CC:PA:LPD:PR (Notice 2022-58)
Room 5203, P.O. Box 7604
Ben Franklin Station, Washington, DC 20044

Submitted Electronically via the Federal eRulemaking Portal at www.regulations.gov (IRS-2022-0058)

Re: Oberon Fuels Response to Request IRS for Comments - 45V and 45Z

Background:
Oberon Fuels, Inc. is an innovative company founded 12 years ago with a focus on decarbonizing the global LPG/propane industry while laying the foundation for renewable hydrogen. We accomplish this by producing renewable dimethyl ether (rDME). rDME can be made from various organic waste streams (*e.g.*, agricultural and food waste such as manure) and can reduce the carbon footprint of transportation fuels when used as 1) a blending agent with LPG/propane; 2) a hydrogen carrier to power the growing fuel-cell electric vehicle market, or 3) a diesel substitute.

Comments Related to 45V
.01 Credit for Production of Clean Hydrogen. (1) Clean Hydrogen. Section 45V provides a definition of the term "qualified clean hydrogen." What, if any, guidance is needed to clarify the definition of qualified clean hydrogen?

(a) Section 45V defines "lifecycle greenhouse gas emissions" to "only include emissions through the point of production (well-to-gate)." Which specific steps and emissions should be included within the well-to-gate system boundary for clean hydrogen production from various resources?

Well-to-gate emissions includes accounting for feedstock production (i.e. the "well" or source of the material used to produce the finished product). For feedstocks that are waste materials, whether they are sourced from an originally fossil or renewable material, the key issue is setting their emissions starting point and then calculating any associated energy inputs to collect and process that waste. Waste materials have two special considerations relative to other feedstocks. First, any emissions associated with the production of the waste are attributed to the primary product and not the waste product. In the example of a waste dairy cow manure, energy used to produce milk is not associated with the manure. The waste product starts at a zero emissions baseline. Second, some wastes are active

greenhouse gas emitters such as manure. Manure releases methane, a greenhouse gas twenty times more potent than carbon dioxide. When left in lagoons or in fields to decompose, manure produces a terrible environmental impact. Lifecycle assessment is able to assess these impacts in a detailed, data driven manner. When waste manure is captured for use as a feedstock for clean hydrogen production that methane-driven greenhouse gas emission impact is eliminated. The quantification of that impact is then subtracted from the "well" analysis. This is usually called accounting for "avoided emissions" - the emissions that would have otherwise resulted from the standard handling of the waste material.

Avoided emissions accounting is well established in systems such as EPA's Renewable Fuel Standard and California's Low Carbon Fuel Standard, in models such as Argonne National Laboratory's GREET, and in the general practice of lifecycle assessment. Avoided emissions are both auditable and verifiable. They are also tremendously important because they represent immediate and significant avoidance of methane greenhouse gas emissions that threaten to lock-in large warming impacts relative to similar quantities of CO_2.

However, we do caution Treasury to avoid directly copying existing rules or requirements from other programs. For example, California has current limitations and is contemplating new limitations on the locations and use of biogas, on avoided emissions credits, and other program elements that stem from interaction with other state-specific climate programs. As Treasury's scope and the goals of the 45V credit are unique, we urge the Department to "go big" and avoid unnecessary complexity.

Treasury should enshrine the principles of treating raw waste as zero carbon intensity prior to processing and incorporating avoided emissions accounting in any guidance issued for calculating the lifecycle emissions of a clean hydrogen fuel under section 45V.

(d) If a facility is producing qualified clean hydrogen during part of the taxable year, and also produces hydrogen that is not qualified clean hydrogen during other parts of the taxable year (for example, due to an emissions rate of greater than 4 kilograms of CO2-e per kilogram of hydrogen), should the facility be eligible to claim the § 45V credit only for the qualified clean hydrogen it produces, or should it be restricted from claiming the § 45V credit entirely for that taxable year?

Facilities producing qualified clean hydrogen should be allowed to produce both qualified clean hydrogen and hydrogen that is not qualified clean hydrogen within the same tax year. Many facilities, including those contemplated by Oberon Fuels, may be forced to conduct batch processing based on feedstock availability. Batches of hydrogen from the same facility may have different feedstocks and carbon

intensities. Auditing and pathway verification procedures should be capable of tracking eligible volumes and providing regulatory certainty for compliance.

(e) How should qualified clean hydrogen production processes be required to verify the delivery of energy inputs that would be required to meet the estimated lifecycle greenhouse gas emissions rate as determined using the GREET model or other tools if used to supplement GREET?

(i) How might clean hydrogen production facilities verify the production of qualified clean hydrogen using other specific energy sources?

(3) Provisional Emissions Rate. For hydrogen production processes for which a lifecycle greenhouse gas emissions rate has not been determined for purposes of § 45V, a taxpayer may file a petition with the Secretary for determination of the lifecycle greenhouse gas emissions rate of the hydrogen the taxpayer produces. (a) At what stage in the production process should a taxpayer be able to file such a petition for a provisional emissions rate? (b) What criteria should be considered by the Secretary in making a determination regarding the provisional emissions rate?

The timing of provisional filings is significant as it ties directly to capital allocation and the ability of technology innovators to demonstrate tax credit eligibility to potential investors.

Treasury should provide a process that allows applicants to file petitions at the earliest possible point, with set maximum review periods. This filing point may be when site specific engineering inputs are available to present a model of the emissions including avoided emissions. If Treasury sets strong look-back, or true-up, requirements that drive applicants to conservative estimation, then the Department should be comfortable with engineering estimations of emissions rather than operating data. Since credit generation is tied to production, there is no impediment to Treasury granting provisional emissions rates for facilities that have not yet been constructed and may not be constructed. This is similar to how EPA allows pathway applications under the Renewable Fuel Standard but requires facility registrations and then monitoring and validation of emissions to certify credit generation.

(4) Recordkeeping and Reporting. (a) What documentation or substantiation do taxpayers maintain or could they create to demonstrate the lifecycle greenhouse gas emissions rate resulting from a clean hydrogen production process? (b) What technologies or methodologies should be required for monitoring the lifecycle greenhouse gas emissions rate resulting from the clean hydrogen production process?

We urge the Department to consider the precedents set by the EPA and various state Low Carbon Fuel Standards (CA, OR, WA) with a note that requirements relating to meter calibration should be revised to accommodate the increasing usage of non-calibrated smart meters.

(d) What procedures or standards should be required to verify the production (including lifecycle greenhouse gas emissions), sale and/or use of clean hydrogen for the § 45V credit, § 45 credit, and § 48 credit?

Annual third-party auditing and site visits to all facilities included in the lifecycle emissions calculations such as feedstock source, intermediate processing, and the hydrogen production facility.

(f) Should indirect book accounting factors that reduce a taxpayer's effective greenhouse gas emissions (also known as a book and claim system), including, but not limited to, renewable energy credits, power purchase agreements, renewable thermal credits, or biogas credits be considered when calculating the § 45V credit?

Book or indirect accounting factors must be considered when calculating lifecycle greenhouse gas emissions. Ultimately, the practice of lifecycle assessment is rooted in analysis of indirect factors. Whether it is relatively straightforward, such as assigning a carbon intensity value to direct energy inputs such as grid electricity or highly complex, such as providing an emissions factor for indirect land use changes.

We urge Treasury in the strongest possible manner to include all of the factors considered above or risk severely undercutting Congressional intent as to render the 45V credit unusable. We repeat our comments above regarding the significance of using avoided emissions calculations (presumably the 'biogas credits' in the prompt) to help identify, monetize, and destroy harmful near-term methane greenhouse gas emissions.

(g) If indirect book accounting factors that reduce a taxpayer's effective greenhouse gas emissions, such as zero-emission credits or power purchase agreements for clean energy, are considered in calculating the § 45V credit, what considerations (such as time, location, and vintage) should be included in determining the greenhouse gas emissions rate of these book accounting factors?

Comments related to 45Z

.02 Clean Fuel Production Credit (§ 45Z). (1) Sale Definition. (a) What factors should the Treasury Department and the IRS consider in determining whether an unrelated person purchases transportation fuel for use in a trade or business for purposes of § 45Z(a)(4)(B)? (b) What factors should the Treasury Department and

the IRS consider in determining whether fuel is sold at retail for purposes of § 45Z(a)(4)(C)?

(3) Provisional Emissions Rates. Section 45Z(b)(1)(D) allows the taxpayer to file a petition with the Secretary for determination of the emissions rate for a transportation fuel which has not been established. (a) At what stage in the production process should a taxpayer be able to file a petition for a provisional emissions rate? (b) What criteria should be considered by the Secretary to determine the provisional emissions rate?

The timing of provisional filings is significant as it ties directly to capital allocation and the ability of technology innovators to demonstrate tax credit eligibility to potential investors.

Treasury should provide a process that allows applicants to file petitions at the earliest possible point, with set maximum review periods. This filing point may be when site specific engineering inputs are available to present a model of the emissions including avoided emissions. If Treasury sets strong look-back, or true-up, requirements that drive applicants to conservative estimation, then the Department should be comfortable with engineering estimations of emissions rather than operating data. Since credit generation is tied to production, there is no impediment to Treasury granting provisional emissions rates for facilities that have not yet been constructed and may not be constructed. This is similar to how EPA allows pathway applications under the Renewable Fuel Standard but requires facility registrations and then monitoring and validation of emissions to certify credit generation.

(7) Please provide comments on any other topics related to § 45Z credit that may require guidance.

Negative Emissions:

The Inflation Reduction Act recognizes avoided emissions accounting in statute in **SEC. 45Z. CLEAN FUEL PRODUCTION CREDIT (b)(1)(C) ROUNDING OF EMISSIONS RATES,** it states**:**

> "(i) IN GENERAL.–Subject to clause (ii), the Secretary may round the emissions rates under subparagraph
> (B) to the nearest multiple of 5 kilograms of CO2e per mmBTU.
> "(ii) EXCEPTION.–In the case of an emissions rate that is between 2.5 kilograms of CO2e per mmBTU and -2.5 kilograms of CO2e per mmBTU, the Secretary may round such rate to zero.

The law thus provides clear instruction that Treasury can calculate negative emissions rates. Noting that it is not specific to positive or negative numbers or absolute values, the rounding provisions in (C)(i) covers all instances, for any number greater than 2.5 kilograms of CO2e per mmBTU and any number less than -2.5 kilograms of CO2e per mmBTU. (C)(ii) then covers the remaining special case of numbers between 2.5 kilograms of CO2e per mmBTU and -2.5 kilograms of CO2e per mmBTU. Under this section, the statute is specific about both positive and negative numbers.

Negative emission rates are only possible when avoided emissions are taken into account. We urge Treasury to provide guidance on how avoided emissions credits will be included in lifecycle greenhouse gas emission calculations under 45Z and provide information on the calculation of credit values for fuels that have a negative carbon emissions intensity.

Lifecycle emissions includes accounting for feedstock production. For feedstocks that are waste materials, whether they are sourced from an originally fossil or renewable material, the key issue is setting their emissions starting point and then calculating any associated energy inputs to collect and process that waste. Waste materials have two special considerations relative to other feedstocks. First, any emissions associated with the production of the waste are attributed to the primary product and not the waste product. In the example of a waste dairy cow manure, energy used to produce milk is not associated with the manure. The waste product starts at a zero emissions baseline. Second, some wastes are active greenhouse gas emitters such as manure. Manure releases methane, a greenhouse gas twenty times more potent than carbon dioxide. When left in lagoons or in fields to decompose, manure produces a terrible environmental impact. Lifecycle assessment is able to assess these impacts in a detailed, data driven manner. When waste manure is captured for use as a feedstock for clean fuel production that methane-driven greenhouse gas emission impact is eliminated. The quantification of that impact is then subtracted from the total greenhouse gas emissions. This is usually called accounting for "avoided emissions" - the emissions that would have otherwise resulted from the standard handling of the waste material.

Avoided emissions accounting is well established in systems such as EPA's Renewable Fuel Standard and California's Low Carbon Fuel Standard, in models such as Argonne National Laboratory's GREET, and in the general practice of lifecycle assessment. Avoided emissions are both auditable and verifiable. They are also tremendously important because they represent immediate and significant avoidance of methane greenhouse gas emissions that threaten to lock-in large warming impacts relative to similar quantities of CO_2.

We request guidance on how negative emission factors will impact the amount of credit for a particular facility. Our understanding is as follows: The value of the

credit is the applicable rate, at a maximum of $1.00, or $1.75 in the case of sustainable aviation fuel, times the emissions factor. For values between 2.5 kilograms of CO2e per mmBTU and 50 kilograms of CO2e per mmBTU, this is a straightforward calculation. For values between 2.5 kilograms of CO2e per mmBTU and -2.5 kilograms of CO2e per mmBTU, the emissions factor is 1.0 leading to credit values of $1.00,or $1.75 in the case of sustainable aviation fuel. For facilities with deeply negative emission rates, such as those using manure feedstocks, the implied credit values may be substantially higher than $1.00. For example, consider a dairy biogas feedstock used to produce renewable dimethyl ether that meets requirements for use as a transportation fuel. The California Air Resources Board has estimated such a pathway would produce a fuel with a lifecycle greenhouse gas intensity, or carbon intensity, of -278 gCO2e/MJ which is equivalent to -293 kilograms of CO2e per mmBTU. The emissions factor is then 50 - (-293)/50 = 6.86 and the credit value would be $1.00 X 6.86 = $6.86/gallon. This is in line with how other carbon intensity based credit programs work.

Fuel Qualifications:

In 45Z (a)(1), the Inflation Reduction Act sets the credit amount on a per gallon basis with respect to a "transportation fuel". "Transportation Fuel" is then defined in (d)(5) as follows:

> "(5) TRANSPORTATION FUEL.–
> "(A) IN GENERAL.–The term 'transportation fuel' means a fuel which–
> "(i) is suitable for use as a fuel in a highway vehicle or aircraft,
> "(ii) has an emissions rate which is not greater than 50 kilograms of CO2e per mmBTU, and
> "(iii) is not derived from coprocessing an applicable material (or materials derived from an applicable material) with a feedstock which is not biomass.

We further note that in the Congressional Record for August 6, 2022 at S4166, Senator Wyden, Chair of the Senate Finance Committee, engaged in a colloquy with Senator Hassan regarding this definition. The colloquy is reproduced here for reference:

> *Ms. HASSAN. Mr. President, I ask unanimous consent to engage in a colloquy with Senator WYDEN for clarification regarding a tax provision included in the bill currently before the Senate. Section 13704 of the bill, which concerns production credits for biofuels, defines "transportation fuel" that can qualify for the credit as a fuel that is suitable for use as a fuel in a highway vehicle or aircraft. The fuel must also be below a carbon emissions ceiling and meet a processing requirement. Senator WYDEN, as chair of the Finance Committee, is it his understanding that, although a fuel must be*

suitable for use as a fuel in a highway vehicle or aircraft to qualify for this biofuel production credit, it may still actually be used for any business purpose, including as transportation fuel, industrial fuel, or for residential or commercial heat? Mr. WYDEN. I thank the Senator for her inquiry. That is correct. The credit is intended to incentivize production of biofuels of a certain quality, usable as fuel for highway vehicles or aircrafts, but not limited only to fuels which are actually used in highway vehicles or aircrafts.

We comment to Treasury that the Congressional intent is clear here not to limit the end-use of the fuel to transportation purposes, but rather to ensure fuel quality.

We strongly support Treasury fully implementing Congressional intent. For Oberon's rDME, the first commercial entry is to the fuel market by blending into propane to reduce its carbon intensity in existing 'autogas' or transportation applications such as forklifts and buses. There are other fuel applications where DME's zero-soot clean burning properties and ability to be produced from renewable feedstocks are a value-add benefit such as the following:

rDME/propane blends:

- In agriculture including tractors, irrigation engines, heaters, frost protection/wind machines
- In power generation applications
- In entertainment and leisure, including small propane cylinder use for portable heaters and barbeques
- In residential and commercial applications

Neat rDME:

- The applications noted above
- Diesel replacement for vehicles, generators, engines, and heaters
- Propane replacement for vehicles, generators, engines, and heaters

In all instances, Oberon is able to produce a fuel that is suitable for use as a fuel in a highway vehicle. We encourage Treasury to use the *ASTM D7901 Standard Specification for Dimethyl Ether for Fuel Purposes* as evidence a DME fuel is suitable for use,as noted in Section 1. Scope of the ASTM D7901 Standard:

> *This specification covers dimethyl ether (DME) for use as a fuel in engines specifically designed or modified for DME and for blending with liquefied petroleum gas (LPG). This specification is for use by manufacturers of dimethyl ether, by engine developers of purpose-built engines, in contracts for the purchase of DME for fuel purposes, and for the guidance of consumers of this type of fuel."*

Thank you for consideration of our comments. Please do not hesitate to contact me with any questions at david.mann@oberonfuels.com.

Sincerely,

David Mann
VP, Regulatory and Governmental Affairs
Oberon Fuels