Notice 2022-58: Request for Comments on Credits for Clean Hydrogen and Clean Fuel Production

About us

SHV Energy and UGI International, a subsidiary of UGI Corporation (NYSE: UGI), two of the world's largest distributors of off-grid energy, formed Dimeta in early 2022 as a joint venture to advance the production and use of Renewable & Recycled Carbon Dimethyl Ether (DME), a low-carbon sustainable liquid gas, to accelerate renewable solutions for the propane industry.

Dimeta is targeting the development of up to 6 production plants within the next 5 years, targeting a total production capacity of 300 ktonnes of Renewable & Recycled Carbon DME per year by 2027. The aggregate investment is estimated to be up to $1 billion.

Dimeta has recently announced Teesworks in the UK as the intended location of its first commercial Renewable & Recycled Carbon DME production plant, which will be operational from 2024. Following this, Dimeta is progressing production plants in North America, as well as in Europe.

Introduction to Renewable & Recycled Carbon DME

Dimethyl ether – known as DME, is already used extensively across the globe, mainly in industrial and consumer application settings. It is a colourless gas that is chemically similar to propane and like propane, it is easy to handle and store in liquid form. Renewable & Recycled Carbon DME can be produced from biogenic & non-biogenic feedstocks, such as biogas, cellulosic material and municipal waste.

Applications for Renewable & Recycled Carbon DME include:

- It can blended up to 20% with renewable propane in existing off-grid heating, cooking and industrial applications with no change to the appliance or fuel delivery infrastructure.
- It can be used as a 100% renewable fuel in industrial applications, especially for high temperature heating that is hard to electrify.
- It can be used as a replacement for diesel in engines, requiring only a retrofit to the vehicle. This solution provides a valuable renewable fuel option for the hard to-decarbonize heavy-duty transport sector. It can also be blended up to 20% into propane for use in existing propane fuelled vehicles.

Transitioning the off-grid energy market

Renewable & Recycled DME can help accelerate the decarbonisation of the off-grid energy market, particularly propane, heating oil and diesel usage in the United States;

- Propane is the third most widely used energy source for homes in the U.S, supporting 50 million homes and 1.1 million businesses. It also supports the

agricultural sector, manufacturers, and also transport through 'autogas' and also in non-road mobile machinery (i.e. forklift trucks). **Renewable & Recycled Carbon DME can be blended with propane to reduce carbon emissions.**

- Heating oil / kerosene is mainly used for space heating in the U.S, with 5.3 million households using it for home heating as their main fuel – with a significant amount in the Northeast census region. Industrial use makes up a large proportion of fuel used. **There is a clear trajectory in the future for some of these buildings to transition to a blend of Renewable & Recycled Carbon DME and propane, or 100% renewable liquid gases, to reach Net Zero.**

- Reducing reliance on diesel is a enormous challenge for the U.S, but Renewable & Recycled Carbon DME can assist on the journey. **Diesel engines can be modified to run on up to 100% Renewable & Recycled Carbon DME,** whether that is for fleet, heavy-duty vehicles and off-road or heavy machinery. While chemically similar to propane, the air quality difference it makes to diesel is significant – with a reduction in SOx, NOx and soot emissions.

We advocate taking a mixed technology approach in off-grid areas when it comes to decarbonising energy. A mixed approach towards decarbonising off-grid homes, business, industry and transport – with sustainable liquid gases, such as Renewable & Recycled Carbon DME as part of this approach – will give the Department the best chance of reaching its Net Zero goals in a cost effective and practical way.

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.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?

The methodology should assess clean hydrogen on the same basis as other renewable fuels. For hydrogen it is particularly important that emissions from H2 transportation to the final customer, including compression, are included within the GHG assessment, in order to accurately capture the true environmental impact of delivering hydrogen to customers.

b) ii) How should emissions be allocated to the co-products (for example, system expansion, energy-based approach, mass-based approach)?

System expansion is typically not an effective way of allocating emissions to co-products, in a GHG assessment for policy-purposes, because it requires expanding the system boundary , potentially outside of the area of expertise or control of the original fuel producer. Energy or mass based allocation is typically more transparent, and for a system that produces predominantly energy products, energy allocation is likely to be most appropriate

(Q3) 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?

A producer should be able to file a petition for a provisional emissions rate as early as possible in the plant development process, to ensure that the time and money involved in project development is not wasted on projects which are unlikely to meet the criteria.

(Q4) Record keeping & reporting

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?

In-direct book-keeping methods (book and claim) should be allowed to be claimed in hydrogen production if these are also allowed to be claimed in the GHG assessment for the production process of other renewable fuels. As stated above, alignment of methodology across fuel types is important to ensure that there is not an artificial bias in favour of one fuel type or another.

(Q7) Please provide comments on any other topics related to § 45V credit that may require guidance

It's vital that the move towards low carbon solutions provides a just transition to all American citizens, whether you have access to mains gas or not. While we support the credit specific for hydrogen, we believe it should be expanded to support other gaseous solutions needed to decarbonise the US Economy, such as renewable propane & renewable DME, which can support the decarbonisation of the propane industry, the third largest energy source in the US.

As for claiming both the renewable electricity tax credit and the hydrogen tax credit, we request that regardless of whether other (non-hydrogen) renewable fuels get a tax credit or

not, it should be possible for these other renewable fuel production plants to also be granted "a special exception to the requirement that electricity be sold to an unrelated party to be eligible for the § 45 credit." As hydrogen is currently granted. This creates a level playing field among all renewable fuels.

In addition, the hydrogen production tax credit should also be available to facilities which sell the hydrogen for onwards conversion into other fuels or chemicals, and to those which self-consume the hydrogen on-site to produce other fuels and chemicals.

Clean Fuel Production Credit (§ 45Z)

(Q1) 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)?**

When considering whether a fuel is sold for use in the transportation sector for either trade and business (as in question 1a) or retail (as in question 1b) the treasury should develop a method that allows suppliers of fuels which may be used in the transport OR heating OR industrial sectors to receive, such as propane and natural gas, to demonstrate that the renewable fuels they supply (such as renewable propane, renewable & recycled carbon DME or renewable natural gas) have been used specifically in the relevant sector which makes them eligible for the credit.

(Q2) Establishment of Emissions Rate for Sustainable Aviation Fuel. Section 45Z(b)(1)(B)(iii) provides that the lifecycle greenhouse gas emissions of sustainable aviation fuel shall be determined in accordance with the Carbon Offsetting and Reduction Scheme for International Aviation or "any similar methodology which satisfies the criteria under § 211(o)(1)(H) of the Clean Air Act (42 U.S.C. 7545(o)(1)(H)), as in effect on the date of enactment of this section." What methodologies should the Treasury Department and IRS consider for the lifecycle greenhouse gas emissions of sustainable aviation fuel for the purposes of § 45Z(b)(1)(B)(iii)(II)?

It is important that any method approved for assessing the GHG emissions of SAF is also applicable to all other renewable fuels used in both transportation and other sectors such as heating and industry. Combined with the significantly higher subsidies available for SAF, if the assessment of the GHG emissions is not strictly and transparently done on the same basis as other fuels, then a risk of adverse outcomes is created.

(Q3) 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?

A producer should be able to file a petition for a provisional emissions rate as early as possible in the plant development process, to ensure that the time and money involved in project development is not wasted on projects which are unlikely to meet the criteria.

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

To truly stimulate the production of low carbon fuels, this tax credit should be extended to include all renewable and recycled carbon fuels, which meet sustainability and GHG requirements, being supplied into the heating sector, in addition to the transport sector. This will also ensure that the race to decarbonise heating is not unintentionally left behind in these programs of support.

In addition, the clean fuel production credit is only available up to end 2027, whereas the clean H2 credit is guaranteed for 10 years from the data of first production at the plant. Clean fuels will be required significantly beyond 2027 and the US needs to stimulate the buildings of new plants, to scale up the supply of renewable fuels and also create jobs and high-value new industries. However plants which are being developed today are unlikely to be operational before 2026, so they would only benefit from 2 years or less of this tax credit. To really support and stimulate the development of new plants and supply of renewable fuels the tax credit should be extended beyond 2027.

Lastly, when considering differential subsidies – whether hydrogen or SAF – these subsidies should be done so as to reflect the true higher production costs of these routes compared to other alternative fuels, so it does not over-incentivize SAF and hydrogen to the extent that resources are funneled into developing these fuels when they could more economically and with greater environmental benefit be used to produce other different types of fuels / for different sectors. As the production costs of SAF and Hydrogen come down, any subsidy scheme should be adjusted to reflect falling production and supply chain costs.