OMNIS FUEL TECHNOLOGIES
February 13, 2024

Thank you for the opportunity to provide the Department of the Treasury with feedback on the proposed regulations regarding the Section 45V Clean Hydrogen Production Tax Credit (REG-117631-23), published on December 26, 2023.

The Department of the Treasury's and the Internal Revenue Service's commitment to incorporating diverse perspectives in its rulemaking process is essential in shaping well-rounded and effective policies. Omnis Fuel Technologies (OFT) and its subsidiaries are deeply invested in clean hydrogen and sustainable energy. As such, I am eager to contribute my insights on the proposed rule provisions relating to clean hydrogen production and discuss our net-zero emission ultra-high-temperature pyrolysis process.

I appreciate the extensive work of formulating the proposed regulations and urge the Department of Treasury to openly support all processes necessary for producing clean hydrogen. Doing so aligns with Congressional intent in the passage of the Inflation Reduction Act of 2022 (Pub. L. 117-169) to incentivize the development of a domestic clean hydrogen industry. Clean hydrogen will be pivotal in our transition to a more sustainable energy landscape. Supporting all hydrogen-producing pathways is critical for a robust 45V tax credit policy framework that fosters innovation and economically feasible approaches that reduce greenhouse gas emissions over time.

I trust that my feedback will be valuable in refining the regulations to ensure a comprehensive approach to clean energy incentives. The IRS's consideration of this feedback will enhance the quality of its policies and foster a spirit of collaboration and trust between the agency and the public.

I look forward to weighing in on the proposed rule and hope it will reflect a broad understanding of the clean energy sector and the vital role of clean hydrogen. Thank you again for the opportunity to participate in this critical discourse.

Sincerely,

Simon Hodson

ABOUT OMNIS FUEL TECHNOLOGIES

Omnis Fuel Technologies (OFT) is a new technology company that has revolutionized the pyrolysis process to extract hydrogen, graphene, and graphite at a fraction of the cost of other extraction methods and with virtually no greenhouse gas emissions. Central to this is the patented ultra-high temperature pyrolysis process, where ultra-high temperatures of approximately 3,000°C or more are reached to meld coal, coal ash, and other fossil fuels into the resources critical to the U.S.'s economic independence and long-term national security, notably hydrogen and graphite, which Omnis refers to as Quantum Hydrogen™ and

Quantum Graphite™. This process is implemented in the revolutionary Omnis Quantum Reformer™ modules. Omnis Fuel's parent company, Omnis Advanced Technologies LLC, holds the patents that enable this groundbreaking technology:

1. Thermal Fracture and Microcarbon Separation of Coal Particles (Patent Number: US-11505464-B2) – This patent creates a process for fracturing and devolatilizing rapidly exposing coal particles to a high temperature, oxygen-depleted work zone for a sufficient period to cause volatile matter within the coal particles to vaporize and fracture the coal particles. This work zone has a temperature range from 600 ° C. to 2000 ° C. The coal particles are exposed to the high temperature, oxygen-depleted work zone for less than 1 second (ideally less than 0.3 seconds). The vaporized volatile matter is carbonized and recovered as deposited solid microcarbon particles.

2. Ultra-High Temperature Pyrolysis Separation of Hydrogen and Carbon (Patent Number: US-20230294983-A1) – This patent outlines a continuous hydrocarbon pyrolysis process to produce hydrogen gas and carbon and includes exposing a hydrocarbon feedstock to an oxygen-depleted combustion gas within a hydrocarbon pyrolysis zone. A valveless pulse combustor produces the combustion gas at a temperature greater than 2,400°C. The hydrocarbon feedstock and combustion gas have a residence time within the hydrocarbon pyrolysis zone of less than 30 seconds to cause pyrolysis of the hydrocarbon feedstock and produce gas comprising hydrogen and solid particles containing carbon. The gas and solid particles exit the hydrocarbon pyrolysis zone at over 1,200°C. A heat exchanger cools the gas and solid particles to less than 200°C. A gas absorber removes unwanted gas molecules from the gas and produces molecular hydrogen-containing gas having a molecular hydrogen concentration greater than 80%. The hydrogen-containing gas is continuously introduced to a molecular hydrogen-consuming facility.

Omnis Fuel leverages significant technological and manufacturing capabilities and experience from the wider Omnis group of companies (Omnis Global and the Ultimate Parent Company, Hodson Investments, LLC). This group of companies specializes in developing, licensing, and commercializing innovative technologies to aid in clean and sustainable energy, affordable housing, organic farming, and biodegradable plastics. The technologies deployed by Omnis and its affiliates have been used in the construction of One World Trade Center (the "Freedom Tower") to further the clean coal initiative with CONSOL Energy (an energy leader in North America) and to revitalize farmland. They have also been used to develop biodegradable containers, leading to significant contracts with McDonald's and Walmart. Omnis Global Technologies is an executive office for affiliates and subsidiaries, including Omnis Fuel Technologies, Omnis Mineral Technologies, Omnis Building, Lapol, and Ceresoil. Omnis Building is also expanding its manufacturing footprint in West Virginia, with its subsidiary, OBT Bluefield, opening a Bluefield facility that safely recycles and effectively remediates alternative post-industrial waste materials like coal ash into safe, eco-friendly panels for home construction. Omnis Global and its subsidiaries have decades of expertise

managing billions of dollars in technologically nascent manufacturing and extraction processes. The family of companies' success is informed by Omnis' logistical expertise with raw materials and advanced manufacturing.

ABOUT ULTRA-HIGH-TEMPERATURE PYROLYSIS AND "QUANTUM HYDROGEN ™"

Omnis Fuel Technology and the Omnis Quantum Refinery process are engaging the U.S.'abundant fossil fuel resources and infrastructure in the green net-zero economy and are revitalizing rural coal communities that have experienced persistent economic decline since 2008. Central to Omnis' Model is the purchase and conversion of decommissioned coal-fired power plants to refinement facilities where coal is reformed into Quantum Hydrogen and Quantum Graphite. The hydrogen remains onsite and is used as fuel in retrofitted plant boilers to generate electricity, eliminating cost-prohibitive transportation and off-site storage costs (i.e., needing super-insulated cryogenic tanker trucks, gaseous tube trailers, or expansive pipeline infrastructure). The valuable graphite is produced in quantities sufficient for commercial scale. Overall, through the ultra-high temperature pyrolysis process and by eliminating cost-prohibitive transportation challenges, Omnis' Quantum Hydrogen has a per-kilowatt-hour production cost of one-tenth the cost of more conventional electrolysis processes.

The ultra-high temperature that drives Omnis Quantum Pyrolysis is produced via oxy-combustion (where concentrated oxygen is used instead of air to burn the fuel) in proprietary valveless pulse combustors. Oxygen can be concentrated from the air by using air separation units. For reference, air is approximately 20% oxygen and 80% nitrogen. The higher the oxygen concentration, the higher the flame temperature and resulting combustion gas temperature from a combustion process. At oxygen concentrations approaching 100%, the flame temperature and resulting combustion gas temperature exceed 3,000°C.

Omnis' proprietary valveless pulse combustors operate such that the combustion gas is oxygen-depleted, meaning less than 1% O_2 in the combustion gas. The valveless pulse combustors create sonic energy through a pressure wave (about 20 to 200 Hz) that improves heat exchange efficiency for hydrocarbon processing in the ultra-high temperature reactor section. The hydrocarbon feedstock material (e.g., coal particles and/or natural gas) is introduced into the ultra-high temperature combustion gas between about 2,400°C to about 3,400°C, depending on the oxygen concentration used to burn the fuel in the valveless pulse combustor. The coal particles immediately heat up to temperatures exceeding 2,500°C after introduction into the ultra-high temperature, oxygen-depleted combustion gas stream. The coal particles pyrolyze and carbonize at these ultra-high temperatures, meaning atoms other than carbon are broken out of the carbon matrix, leaving only carbon behind.

A major component of coal or any hydrocarbon is hydrogen. The hydrogen atoms that are removed from the coal particles via pyrolysis and carbonization to make a carbon particle combine to make hydrogen gas (H_2). Omnis data shows that as the carbon particles heat up

to temperatures exceeding about 2,500° C, the structure of the carbon atoms rearranges to form layers of sheets of carbon. These carbon layers are graphite. Evidence suggests that as the temperature of the carbon particles approaches 3,000° C, graphitization of the carbon particles is about 90% or more. Oxy-combustion is needed to produce temperatures high enough to drive graphitization of the carbon particles produced in the reactor section.

The Omnis Fuel process and technology impart significant value to the carbon particles produced (e.g., carbonization and graphitization), enabling and supporting the economic feasibility of hydrogen production for use in combustion at reclaimed coal power stations. The hydrogen produced in the Omnis Quantum Reformer is continuously used as a combustion fuel.

The exhaust from the combustion of hydrogen to ultimately produce electricity is warm nitrogen and water vapor with some excess oxygen that was not consumed in hydrogen combustion. Critically, Omnis Fuel is taking advantage of locating its Quantum Reformer modules and overall hydrogen production facility adjacent to its power generation plant, modified to burn hydrogen as part of this continuous process. As such, costly and logistically complex hydrogen storage and transportation challenges are eliminated.

QUANTUM HYDROGEN AS QUALIFIED CLEAN HYDROGEN

The Omnis Quantum Reformer system and its proximity (i.e., onsite) to a reclaimed power station, whose boilers are modified to burn hydrogen, are central to process economics and the net-zero emissions outcome. This system will support a continuous hydrocarbon pyrolysis process that produces hydrogen gas and solid graphitic particles. Producing hydrogen via ultra-high temperature pyrolysis and carbonization of the coal particles and natural gas (hydrocarbon) feedstock means that most of the carbon atoms in the feedstock become solid carbon particles that have undergone graphitization. In contrast, if the coal particles and natural gas feedstock were burned to produce energy, all the carbon atoms would be converted to CO_2 in the combustion process. Thus, any carbon atom that is "captured" as a solid carbon particle from Omnis Fuel's ultra-high temperature pyrolysis process could be considered sequestered as the carbon atom is not released into the atmosphere as CO_2 as would be the case if the coal were burned to produce energy.

In the Omnis Quantum Reformer, CO_2 emissions are minimized, but may be present in:

1. CO_2 produced when burning CNG in the valveless pulse combustor to produce the heat for the process,
2. CO_2 produced when carbonizing the coal feedstock because oxygen atoms are present in the carbonaceous matrix that makes up coal,
3. CO_2 produced in the reaction of steam from the combustion reaction with carbon-containing molecules and particles in the ultra-high temperature reactor section.

The carbonaceous matrix of coal particles also contains nitrogen and sulfur atoms. Like the removal of hydrogen atoms from coal particles and natural gas molecules, ultra-high temperature pyrolysis causes the carbonization of coal particles, which breaks bonds and removes nitrogen and sulfur atoms from the carbonaceous matrix. An expected product for nitrogen atoms in the presence of hydrogen atoms or hydrogen gas is NH_3 gas. Other nitrogen-containing molecules may also form. An expected product for sulfur atoms in the presence of hydrogen atoms or hydrogen gas is H_2S gas. Other sulfur-containing molecules may also form. A hydrogen-containing process gas exits the reactor section of the Omnis Quantum Reformer. Solid graphitized carbon particles are in pneumatic conveyance in the hydrogen containing process gas. Other gases present in the hydrogen-containing process gas may include CO_2, NH3, and H_2S.

The temperature of the hydrogen-containing process gas after the reactor section is about 2,500° C or more. A Heat Exchanger is installed to cool the hydrogen-containing process gas temperature below 100° C. The hydrogen-containing process gas with entrained solid graphitized carbon particles goes through a baghouse to separate the solid graphitized carbon particles from the hydrogen-containing process gas. Steam is produced in the heat exchanger at a temperature and pressure sufficient to produce electricity using a steam turbine. The electricity produced from the heat recovered using this heat exchanger is also sent onto the grid to supplement the electricity made from the heat produced when hydrogen is burned in the boilers of the Pleasants Power Station.

Standard gas absorption techniques and equipment will be installed to remove other gases besides hydrogen from the hydrogen-containing process gas to produce a hydrogen gas stream greater than 90 vol. % hydrogen. More than 90% of the hydrogen gas created will be sent to the power station to be burned in the modified boilers. Any GHG gases removed from the process gas stream to produce the greater than 90% hydrogen gas stream that will be burned at the converted power stations will be sold into large existing markets. CO_2 will be sold into the food processing and industrial use markets. NH_3 and H_2S have value as raw materials in various chemical production industries. For example, over 85% of NH_3 is used to make fertilizer. As another example, H_2S is a precursor for sulfuric acid. As a result, other gases removed from the process gas steam to make the greater than 90% hydrogen gas that will be burned in the power stations have value after separation from the hydrogen. Burning the greater than 90% hydrogen gas stream produces warm nitrogen and water vapor exhaust, virtually removing all greenhouse gas emissions.

COMPARISON OF HYDROGEN COSTS AND EMISSIONS BY TECHNOLOGY

Type of Hydrogen	Technology	Current Market	Cost (in USD/kg of H_2	Total Comprehensive Cost of H_2 per Kilogram FOB Factory	Kilograms of CO_2/CO_2e Emissions per kg of H_2 Generated

Quantum	Ultra-high temperature pyrolysis (UHTP) pulse jet system to reform coal, oil, natural gas, or biomass at > 3,000° C and zero oxygen; UHTP powered by hydrogen slipstream or natural gas	Lowest cost, fastest path to commercialization, zero emissions, novel technology to produce pure hydrogen and high-grade graphite byproducts onsite at electrical power generation facilities	$0.22 — $0.50	$0.22 — $0.50	0.64***
Black/Brown	Hydrogen is produced from gasification of coal.	23% of the global annual hydrogen supply is made using coal gasification. It has the highest emission footprint	$0.9 — $1.5	$7.9 — $8.5	15 — 26
Grey	Hydrogen is produced from steam methane reformation (SMR) of natural gas.	Most popular method: 76% of the global hydrogen demand is met using this process.	$1.7 — $2.3 (Dependent on $ of natural gas)	$7.4 — $9.3	10 — 15
Blue	Hydrogen is produced from fossil fuels (natural gas and coal) when carbon emissions are captured during the carbon capture and sequestration (CCS) process.	The CCS process captures 80%-90% of the carbon emissions, and the rest is released into the atmosphere.	Coal: $1.3 — $3.6 Natural gas: $2.7 — $3.3	$8.3 — $10.6	~11
Green	Electrolytic production of hydrogen using renewable power. Hydrogen from biomass using carbon capture and storage is also called green hydrogen.	It contributes 1% to the total hydrogen demand (though not all is green). It has net-zero emissions. It is the most expensive process of hydrogen production	Using RE: $3.5 — $5.5 Using biomass: $2.7 — $5.5	$9.7 — $12.5	0**

* Including an average of $7 USD per kg for cooling and pressurization
** Omits the CO_2/CO_2e generated from the electricity utilized in the process
*** Some CO_2 may be generated, but will all be captured and sold for food processing and other applications

QUANTUM HYDROGEN AND THE 45VH2-GREET MODEL

As the proposed regulations = significantly limit tax credits based on GREET calculations of lifecycle greenhouse gas emissions, numerous hydrogen-producing pathways are severely constrained—variables include emissions from feedstock extraction, processing, and delivering, and the electricity source. Carbon Capture and Sequestration technologies are well represented in the Department of Energy's updated GREET Model, and significant consideration is given to coal gasification processes with potential carbon capture and sequestration.

The updated GREET model does not have a cohesive process for calculating lifecycle greenhouse gas emissions in ultra-high temperature pyrolysis facilities, given the nascency of the technology. However, Omnis Fuel will demonstrate the ability to continue using hydrocarbon fuels, including fossil fuels, with no GHG emissions through its soon-to-be-activated facilities in Oklahoma and West Virginia. Critical alignments with the required minimal GHG outputs from the 45VH2-GREET Model are summarized below:

1. Omnis will create hydrogen for use in converted boilers onsite, eliminating the resource-heavy and cost-prohibitive transportation variables associated with shipping H_2.
2. Omnis' use of retiring coal plants allows the company to rely on existing infrastructure and supply chains to procure hydrocarbon feedstock at the plants.
3. Generated electricity from hydrogen onsite will be used to power the Quantum Refinery onsite.
4. Because of the extremely high temperature, the carbon atoms rearrange to form layers of sheets of carbon, producing high-value synthetic graphite, as opposed to CO_2 emissions.
5. Any minimal CO_2 created will be captured and sold to the food processing industry. Any NH_3 and H_2S produced will be captured and sold for industrial use.

CONCLUSION

Omnis Fuel Technologies can effectively reform coal and natural gas to produce hydrogen without emitting greenhouse gases. This innovative technology, converting coal-fueled plants to burn zero-emission hydrogen, creates an alternative solution for sustainable power that can repurpose coal-fired power plants in a way never seen before. In addition to supporting the current administration's goal for zero-carbon electricity by 2030, converting coal-fired plants to burn hydrogen broadly supports preserving and creating domestic jobs in energy communities.

For the US to achieve its ambitious energy goals, it is necessary to proliferate the Omnis Fuel transformation model to coal-fueled power plants across the US and demonstrate technology pathways to convert them to run on hydrogen and produce abundant graphite. Technologies like this are critical to support the development of affordable, dispatchable, and secure energy resources in the United States. The Omnis Quantum Reformer process is the kind of innovation that will catalyze economic revitalization in our domestic energy industry. As part of the investment to build an Omnis Quantum Reformer and modify the Pleasants Power Station to burn hydrogen, customized engineering designs will be prepared to install gas capture technology, which could be replicated in power and industrial plants across the United States.

Overall, through the presentation of Omnis' groundbreaking, net-zero emission Quantum Reformer and the resulting Quantum Hydrogen, we hope that the Department of Treasury will recognize the importance of supporting all hydrogen-producing pathways. An all-of-the-

above approach to the 45v tax credit program will support greenhouse gas-reducing innovation and establish the United States as a global hydrogen-producing leader.

As such, we request that our high-temperature pyrolysis transformative technology be included in the 45V tax credit program.