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Prometheus Comments re Hydrogen Refueling Infrastructure

Additional submitted attachment is included below.

PROMETHEUS

March 17, 2022

Via Electronic Submission
Comments to Docket # 19-TRAN-02

Subject: Concept for Hydrogen Refueling Infrastructure

Dear Commissioner Monahan:

Prometheus Fuels, Inc. (Prometheus) writes regarding the Legislature's allocation of funds for zero-emission vehicle infrastructure in FY2021-22. With that allocation, California has a chance to invest in best practices that will pay dividends for the State's climate goals in the future. Prometheus offers the following comments regarding the opportunity for meaningful technology innovation in California's hydrogen refueling infrastructure.

I. Prometheus Green Hydrogen is Made from Only Renewable Resources.

Prometheus is a California-based company that uses direct-air-capture (DAC) technology and renewable energy (e.g., solar, wind) to manufacture zero net carbon and zero carbon fuels, also known as electrofuels. One such fuel is green hydrogen. The only inputs to its fuel-production process are air and renewable electricity and the only outputs are fuel and oxygen. More information about our company is available at www.prometheusfuels.com.

Prometheus makes its zero net carbon electrofuels using a novel, proprietary process that operates on the principle of reverse combustion. It does this in modular, containerized systems called Fuel Forges. Each modular container has a capacity to produce 100,000 gallons of liquid fuel and 100,000 kilograms of hydrogen per year.

First, a Fuel Forge captures carbon dioxide (CO_2) and water (H_2O) from the air. Second, Prometheus uses only renewable electricity such as solar and wind power to turn the CO_2 and H_2O into long-chain alcohols and hydrogen via electrocatalysis. During this second step, oxygen is released, acting as a kind of mechanical forest, adding 1.3 million kilograms of oxygen to the air, or roughly the same amount of oxygen emitted by 127 acres of forest.[1] Third, Prometheus separates the alcohols from the remaining H_2O. Finally, a catalyst turns the alcohols into hydrocarbons and recovers water. This step can be customized to produce gasoline, diesel, or jet fuel. The proprietary catalysts used by Prometheus are licensed from U.S. National Laboratories, representing decades of successful national renewable energy research.

Unlike other companies that employ direct air capture of CO_2, Prometheus relies on no fossil-fuel energy to make its products, and does not contribute to or sustain business-as-usual fossil fuel use.

[1] The forest equivalent refers to old-growth oak forest and is based on an approximate value determined by Timothy J. Fahey, professor of ecology in the department of natural resources at Cornell University. See C. Claiborne Ray, *Tree Power*, THE NEW YORK TIMES (Dec. 3, 2012), https://www.nytimes.com/2012/12/04/science/how-many-pounds-of-carbon-dioxide-does-our-forest-absorb.html.

Prometheus's electrofuel production also has no impact on the food supply as it does not compete with land use for agriculture and does not use food stocks like corn or vegetable oils. Prometheus's manufacturing process is designed to yield no waste, and to not add any new carbon emissions into the atmosphere.[2]

II. Prometheus Green Hydrogen can Help Achieve the State's Goals.

Zero net carbon electrofuels – like the green hydrogen made by Prometheus – represent a new alternative to legacy greenhouse gas emission reduction strategies. Prometheus green hydrogen also supports the transition to zero-emission vehicles by providing appropriately energy-conscious fuels at reasonable retail prices. To wit, Prometheus green hydrogen can be produced on-site at any hydrogen fueling location with a renewable energy source; Prometheus green hydrogen can provide head-of-household jobs for California residents; and Prometheus green hydrogen can be available to any community that wants to rely on hydrogen as a transportation fuel resource because it will be cost-competitive.

As California evaluates which hydrogen refueling infrastructure projects to support, Prometheus submits that green hydrogen projects (1) should directly utilize renewable energy, not fossil-based energy or renewable credits/offsets, and (2) should be designed to be produced at scale. Harnessing recent developments in catalyst development, the dramatic dropoff in cost of renewable power, and innovations in nanotechnology, electrofuels address the pressing need to decarbonize transportation with a globally scalable and practical replacement for fossil fuels. Zero net carbon electrofuels such as those made by Prometheus present governments, businesses, and consumers with a simple, low-cost solution to the problem of replacing fossil fuels with no needed infrastructure changes.

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Prometheus reiterates its support for California's fuel transition. Prometheus green hydrogen and electrofuels can help decarbonize the transportation industry and stop the flow of new CO_2 emissions as fast as we can scale, with the end goal of halting that flow for good. We would welcome additional discussion with the team working on these important issues. Thank you for your consideration.

Sincerely,

Rob McGinnis, PhD
Founder, CEO
Prometheus Fuels, Inc.
prometheusfuels.com

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[2] *Compare with* Letter from Environmental Justice Community to Administrator Michael Regan: Implementation of the Renewable Fuel Standard e-RINs for wood biomass, landfill gas, and factory farm gas, (May 25, 2021) (identifying that "[i]mpacted frontline communities already bear the disproportionate brunt of harm from the processing and burning of woody biomass, factory farm gas, and landfill gas."), http://foe.org/wp-content/uploads/2021/05/No-e-RINs-for-Biomass-Landfill-Gas-or-Factory-Farm-Gas-Letter-final-2.pdf.