



Electrochaea Corporation • 9921 Carmel Mountain Rd. #325 • San Diego, CA • 92129-2813

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March 15, 2023

Chair, Lianne M. Randolph  
California Air Resources Board  
1001 I Street  
Sacramento, CA 95814

Dear Chair Randolph:

**Re:** *lcfs-wkshp-feb23-ws; Public Workshop to Discuss Potential Changes to the Low Carbon Fuel Standard*

Electrochaea appreciates the opportunity to provide comments regarding the Public Workshop to Discuss Potential Changes to the Low Carbon Fuel Standard. Electrochaea is a provider of a power-to-gas biomethanation solution for the industrial-scale production of renewable synthetic methane. The biomethanation process utilizes biogenic CO<sub>2</sub> that would otherwise be released into the environment from sources such as biogas, landfill gas, or ethanol production. Like biomethane from RNG, the power-to-gas biomethanation process can decarbonize the gas grid by replacing fossil natural gas with renewable synthetic methane. Additionally, renewable synthetic methane provides long-duration renewable energy storage, and its use can prevent the curtailment of renewable generation resources.

Electrochaea's comments address (1) the ability of carbon capture and utilization to significantly increase the availability of biomethane, and (2) the importance of incentives for biomethane production and use beyond the transportation market.

**“Biomethane supplies need to grow rapidly and then be deployed to more end uses”<sup>1</sup>**

The 2022 Scoping Plan predicts that biomethane will be an important source of energy in the future and indicates that there needs to be accelerated production of this renewable replacement for natural gas. Electrochaea agrees that the production of renewable methane must be accelerated to meet the State's climate goals. Multiple means to accelerate production should be employed. One method of producing renewable methane that is not included in the sources of biomethane shown in the Scoping Plan (Fig. H-3; 2022 Scoping Plan) is the ability to utilize biogenic CO<sub>2</sub> to produce methane in a process called methanation. The CO<sub>2</sub> that is

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<sup>1</sup> Slide 30: [https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/lcfs\\_meetings/LCFSpresentation\\_02222023.pdf](https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/lcfs_meetings/LCFSpresentation_02222023.pdf)

currently being emitted in biomethane upgrading processes can instead be recycled into synthetic methane. For example, Electrochaea's biomethanation process recycles CO<sub>2</sub> by combining CO<sub>2</sub> and hydrogen to produce methane. When hydrogen is produced by electrolysis using renewable energy, this is a power-to-methane process that also holds additional benefits such as the storage of renewable energy for later use. Capturing and utilizing the CO<sub>2</sub> component of biogas would significantly increase the availability of biomethane; the amount of methane could be nearly doubled when methanation is performed on raw biogas or landfill gas. CARB can play a role by supporting regulatory measures that can provide incentives to support the scaling of nascent technologies that can significantly increase fuel supplies.

**“We expect complementary policies will also value methane reductions and support biomethane demand in the future”<sup>2</sup>.**

The 2022 Scoping Plan does not predict an increase in the use of biomethane in transportation but does predict large increases in other end uses (Figure H-4: 2022 Scoping Plan). Incentives, like those that have served to increase the production of RNG for transportation, should be implemented for end uses beyond transportation without delay. California should act now to accelerate the production of biomethane. Electrochaea strongly supports the need for increased incentives and agrees with statements made by CARB Staff at the Workshop. These complementary policies/incentives must be rapidly implemented in order to facilitate the increased production of biomethane. California policies and regulations should align with policies established in the Inflation Reduction Act of 2022 and the Bipartisan Infrastructure Law.

Electrochaea recommends the following policies that would support increases in the production of renewable methane that can replace fossil fuels.

- (1) The definition of biomethane should be inclusive of low carbon intensity synthetic methane, produced from biogenic CO<sub>2</sub>. The definition should be dependent upon the source of the CO<sub>2</sub> and the CI of the final methane product and not the method that was used to produce the methane. Providing an inclusive definition will signal to the market that investments should be made in this valuable fuel.
- (2) CARB Staff indicated that only 9 design-based pathways have been approved since 2019. Approval of design-based pathways for new technologies is another method to promote investment in the production of new means to produce clean fuels for transportation and beyond, thereby accelerating the availability of biomethane for new end uses.
- (3) An additional incentive would be to allow any fuel produced from biogas or landfill gas to be exempt from the proposed deliverability requirement in the same way as hydrogen. (Slides 33 and 47 in the Workshop)

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<sup>2</sup> Slide 31: [https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/lcfs\\_meetings/LCFSpresentation\\_02222023.pdf](https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/lcfs_meetings/LCFSpresentation_02222023.pdf)

- (4) Book and claim accounting for low-CI electricity should apply for electrolysis to produce hydrogen in the production of fuels both within and beyond the transportation sector. Allowing flexibility for low-CI electricity procurement for electrolysis is another method to promote investment in the production of new clean fuel technologies and increase biomethane production.

Electrochaea appreciates the opportunity to participate in the process to further improve the LCFS program and to create incentives that will promote the production of clean fuels for use beyond the transportation market.

Sincerely,

A handwritten signature in black ink, appearing to read "Ch. Wil", written in a cursive style.

Christopher Wilson, Renewable Energy Engineer  
Electrochaea Corporation