BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE

STATE OF CALIFORNIA

Order Instituting Rulemaking to Adopt Biomethane Standards and Requirements, Pipeline Open Access Rules, and Related Enforcement Provisions.	**Rulemaking 13-02-008** **(Filed February 13, 2013)**

ELECTROCHAEA CORPORATION OPENING COMMENTS ON ADMINISTRATIVE LAW JUDGE'S RULING DIRECTING PARTIES TO FILE COMMENTS ON PHASE 4A STAFF PROPOSAL AND RELATED QUESTIONS

Mich Hein
Electrochaea Corporation
500 Capitol Mall, Suite 1900
Sacramento, CA 95814
Tel: (773) 241-4947
Mich.Hein@electrochaea.com

CEO of Electrochaea Corporation

Sarah Kozal
Buchalter, A Professional Corporation
500 Capitol Mall, Suite 1900
Sacramento, CA 95814
Tel: (916) 945-5461
skozal@buchalter.com

Counsel for Electrochaea Corporation

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Electrochaea Corporation (Electrochaea) submits these opening comments pursuant to Rule 14.3 of the Rules of Practice and Procedure of the California Public Utilities Commission (Commission or CPUC) related to the *Administrative Law Judge's Ruling Directing Parties to File Comments on Phase 4a Staff Proposal and Related Questions* (ALJ's Ruling) and the attached Staff Proposal. Electrochaea filed a Motion to Become a Party in this proceeding on June 25, 2021.

I. INTRODUCTION

Electrochaea Corporation is a subsidiary of Electrochaea GmbH, a dynamic growth-stage company with headquarters, engineering and development teams in Munich, Germany. Electrochaea has developed an industrial-scale solution for the production of grid-quality renewable methane which can replace any use of fossil natural gas. The proprietary power-to-gas process converts hydrogen produced from renewable energy and carbon dioxide into renewable methane, also called renewable natural gas (RNG). Operating plants have been

injecting renewable methane into commercial gas grids in Switzerland and Denmark, and Electrochaea has worked with the National Renewable Energy Laboratory (NREL) on a research reactor in Golden, Colorado, supported by a grant from Southern California Gas Company.

Electrochaea has been actively exploring potential projects to serve the California market and believes that our biomethanation technology can play a substantial role in meeting the climate goals of the State of California, with support and recognition of the value of the technology and those like it, from agencies in California. Electrochaea encourages the Commission to provide goals and policies to green the gas grid, while avoiding prescriptive choices. It is important to let the private sector evaluate and commercialize technologies that deliver on the policy goals, while the Commission ensures a regulatory apparatus supportive of required investments.

II. COMMENTS

Electrochaea offers the following comments on the specific questions directed by the ALJ's Ruling.

1. Do you agree with Energy Division's proposed method of determining cost-effectiveness? Why or why not? What, if anything, would you change?

a. Electrochaea supports a cost-effectiveness analysis that recognizes RNG in the gas grid as an emerging technology.

Generally, Electrochaea supports the idea of a cost-effectiveness analysis for procurement to the extent that it considers both the societal benefits of RNG and includes an evaluation of the benefits to the producer in considering the reduction of risk. It is key that any analysis consider the development stage of the technology and its societal benefits. The

Commissions's larger focus, however, should be on removing barriers to private industry rather than only directing procurement.

As was seen with the adoption of wind and solar, every new technology starts at a high price and is driven down once to scale. Though RNG has been a growing fuel in the transportation sector, its use as a fuel source in the natural gas pipeline system in California has been more limited. The State's ambitious climate goals should be supported by appropriate regulatory and related financial stability to stimulate investments. A supported, stable, long-term market will provide impetus for investments in innovation and large scale infrastructure. More optimal use of landfill sites and other non-dairy biogas sites would capture the full capacity of current methane production and leverage the existing infrastructure to accelerate the displacement of fossil gas. Addressing the regulatory frameworks challenges that prevent such enhanced and streamlined market entry should be the CPUC's primary concern.

b. The Commission's primary focus should be on removing barriers to entry of RNG on the gas grid.

The Commission should focus efforts on evaluating the regulatory barriers for RNG and seeking to address those first, doing so to drive the cost down and reduce risks for investment in renewable gas production. For example, monetary incentives for pipeline interconnection costs provide an important stimulus essential to the success of the program. These should be continued and expanded.[1] Interconnection costs present a significant barrier to new market entrants wishing to inject RNG into the natural gas pipelines.

[1] Staff Proposal at 11.

Additionally, predictable and sustained incentives for projects outside the transportation and LCFS market framework will result in long-term purchase agreements essential to project investment. The Staff Proposal recognizes this, stating that "[s]ignificantly increasing biomethane production will require long-term purchase agreements so that project producers can obtain lower cost financing, which will result in lower biomethane production costs."[2] However, those contracts are only valuable to the extent that regulatory-imposed timelines and costs do not limit the ability of RNG to provide that source of investment risk reduction.

The Staff Proposal recognizes that the LCFS market may become saturated[3] and depends on significant investment in the transportation fleet. It thus remains important that there is a secure future market for the biogas that is being produced at non-dairy biomethane sites such as landfills and wastewater treatment plants. With existing landfill emissions representing 41% of the methane point emissions in the state,[4] incentives are needed to collect and upgrade this gas for gas grid injection, and will result in lowering the climate impact across all gas uses. While dairy gas operations disproportionately go to meet transportation targets and the LCFS market, there is little impetus for the landfills and other sources to participate, especially when the lack of incentives and high cost of interconnection burden drive the cost up.

2. Do you agree with Energy Division's proposed procurement targets? Why or why not? What, if anything, would you change?

[2] Staff Proposal at 32.
[3] Id. at 42.
[4] Id. at 34.

a. Focus of procurement targets should be on GHG emissions reductions and incentivizing investment in RNG interconnection to the gas grid.

Overall, the CPUC should be making targets to reduce the carbon intensities of the gas grid, a strategy proven effective in lowering the GHG impact of the power grid over the last 20 years. Electrochaea is encouraged to see the CPUC recognize that building electrification is not the only answer to the energy transition, noting that "[c]asting California's energy future as a choice between building electrification and biomethane procurement is a false dichotomy."[5] Procurement of RNG by utilities will allow core customers to have the opportunity to support the use of renewable gas. Core customers, who are unlikely to convert their vehicles to RNG but do use natural gas for residential heating and cooking, can thus contribute to reductions in near term greenhouse gas emissions via the existing gas infrastructure.

As discussed above, with concerns surrounding the cost for biomethane, the incentives for procurement should include existing landfills sites in the favored gas sources through 2030 (if not beyond). Indeed, a more holistic approach to easing barriers that includes regulation changes for landfill production sites may better accomplish the goal of supporting the diversion of waste and simultaneously displacing fossil gas from all uses. Tying procurement targets directly to the needed diversion may not result in the procurement of the best or most efficient technologies, as it does not emphasize GHG reductions in the gas grid itself.

The Commission should be considering incentives for RNG production to alleviate the startup costs of new technologies. For context, from 2014-2020, there was a 14-48% decrease in CO_2e emissions from electricity generation depending upon the month.[6] During this same

[5] Staff Proposal at 56.

[6] http://www.caiso.com/todaysoutlook/pages/emissions.html

time period, there was a 2.2 fold increase in solar capacity which resulted in a 2.6 fold increase solar-derived electricity generation.[7] With the current incentives for RNG production for the transportation market, it is predicted that there will be ~4 fold increase in RNG production that will be sold into the transportation market.[8] While this will make an impact on transportation, this is equivalent to only ~1% of the natural gas used in California. In order to make a significant impact on the global warming potential of the gas grid, further incentives will be needed to expand construction of RNG production and injection on the grid for uses beyond transportation.

b. Any procurement targets should align with other regulatory needs or structures.

With the increasing interconnectedness of all of California's sectors in its efforts to reduce emissions and the impacts of climate change, new policy directives should seek to better match impacts while allowing the private sector to drive those changes. Focus on these linkages of multiple sectors (referred to as the "circular economy") ultimately lowers the amount of capital needed to achieve these system-wide goals. Electrochaea thus supports the idea that incentives for interconnection and procurement for RNG be directed to support diversion of landfill waste, but emphasizes the need to direct overall GHG reductions in the gas grid as a priority.

Also important is the fact that renewable gases, including renewable hydrogen and renewable methane, directly link the gas and power grids for efficient distribution and storage of renewable energy to align with the long-term storage needs of the electric grid. There is a

[7] https://ww2.energy.ca.gov/almanac/renewables_data/solar/index_cms.php
[8] https://www.bioenergyca.org/wp-content/uploads/2020/07/GNA-Report-CA-RNG-Supply-Assessment-July-2020.pdf

synergy to be found in coupling the renewable power sector with renewable gas. By providing a buyer for economically curtailed power, biomethane production facilities would simultaneously enable production of additional low-cost renewable gas and recover lost revenues for the power sector. This power-to-gas process can provide a perpetually sustainable and renewable fuel for the gas grid and stabilize economic returns for the developers of renewable power generation.

Critically, power-to-gas adds an additional advantage of providing seasonal storage of renewable energy. Electrochaea's model is premised on utilizing intermittent renewable generation at times of peak production, often when this generation is curtailed for market reasons, in order to store that clean energy for use at another time. Analogous in many ways to pumped hydro or other forms of gravity-based storage, Electrochaea's technology is able to convert wasted emissions from other sources into RNG for much later future use. In this way, the existing gas grid becomes California's largest battery, storing renewable energy for use later in the day, month, or even year. The Commission must recognize these complementary possibilities instead of continuing to evaluate gas and electric issues in largely separate, even competing, dockets.

c. Targets as drafted are unclear in their directive.

The Staff Proposal includes two targets utilizing different units and tied to different metrics.

For 2025, the target is tied to the required diversion of 75% of organic waste (compared to 2014 levels) away from landfills. This represents 8 million tons of organic waste, which

Electrochaea calculates could be used to produce 100 bcf of methane, if all of the organic waste was digested in an anerobic digester. That amount of methane is approximately 5% of the total amount of natural gas used in the state in 2019.

The second target for 2030 is framed in terms of the reduction of short-lived climate pollutants (SLCP), meaning methane. Electrochaea concludes from the Staff Proposal that the 2030 target of 4 million tons of CO2e landfill reductions is a total per year reduction, including the diversion of organic waste that is contained in the 2025 target.

However, by 2025 it is unlikely there will be enough infrastructure available to divert the 8 million tons suggested by these targets. When planning for beyond 2025, the Commission should look to *incentivizing* projects such as landfills, which need support for tightening up leaks, upgrading the gas and interconnections to the grid. Dairy projects have already received incentives as a first tranche through LCFS credits and the transportation sector. The Commission should be increasingly seeking opportunities to incentivize development more broadly across the economy into other sectors and for other uses.

In order to be useful as targets, specific volumes (or mmbtu) of biomethane produced and used could be more appropriate, including uses for both transportation and to be injected into the grid, as the market deems most optimal. As discussed above, Electrochaea continues to recommend that specific reductions in the carbon intensity of the gas grid should be targeted allowing for the private sector to determine the most investment-worthy, effective solutions. By way of example, if an Electrochaea biomethanation system was attached to the food waste anaerobic digesters, the State's food waste could produce nearly 10% of the total natural gas used. Reutilizing the CO_2 that is emitted during biogas upgrading with a CCU

(Carbon Capture Utilization) technology would allow a further reduction in the CI of the gas grid.

3. Energy Division proposes 10 recommendations in addition to their proposed cost-effectiveness approach and procurement targets. Please address each of the 10 additional recommendations individually, stating whether you agree with them or not and specifying what, if anything, you would change.

a. Ensuring Safety

Electrochaea is in favor of the reductions in hydrogen sulfide (H2S). Electrochaea's technology demonstrably reduces the amount of H2S and thus we know this safety recommendation is feasible.

b. Minimizing Costs to Ratepayers

Electrochaea is in favor of the IOUs submitting a procurement plan with an additional goal to reach a 20% percentage of renewable methane in the gas grid by 2030,[9] and with increasing target in 2030, 2035, and 2040. Such goals, in combination with the suggested Tier 1, 2, and 3 Advice Letter pricing would provide incentive for deployment of sufficiently large biomethane production to lower cost to ratepayers over time. However, it is critical that the CPUC remove barriers to access to renewable energy and interconnection in order to ensure a viable market can be available to meet such targets.

Additionally, Electrochaea urges the Commission to consider the benefits of co-locating biomethanation facilities with landfills. This will allow developers to leverage existing and

[9] Based on SoCalGas's commitment in 2019 to replace 20% of the NG with RNG by 2030. https://www.sempra.com/socalgas-announces-vision-be-cleanest-natural-gas-utility-north-america

operating infrastructure, reducing capital requirements. Certain permitting barriers may need to be addressed at operating sites, but will ultimately save time, risk and expense for new sites.

c. Preventing Increases in Localized Particulate Emissions

Electrochaea generally supports efforts to prevent increases in localized particulate emissions and urges the Commission to consider more impactful recommendations. As with the ability to co-locate biomethanation facilities with landfills, the ability to utilize renewable energy from the grid is key. The costs associated with on-site generation (both running it and building it) are higher than accessing wholesale renewable energy during times of peak generation when such renewable resources may be otherwise curtailed. Allowing such utilization can provide cross-sector benefits and limit local land-use and emissions impacts.

d. Maximizing GHG Emissions Reductions

Electrochaea suggests that if facilities are to be prioritized that use carbon capture, it should include carbon capture utilization and sequestration, not sequestration only. Adding an additional utilization of carbon captured provides even more carbon reduction and efficiency benefits.

e. Facilitating Use of Pyrolysis in Biomethane Production Operations

Electrochaea is only in favor of using the waste byproducts as a soil amendment if a standardized method of detection is used to prevent soil contamination by heavy metals, PFAS and other toxic compounds.

Electrochaea does not directly support the recommendation for utility pilot programs, as utilities are not best situated to develop pilot projects. Utilities cannot tolerate risks well

within statutory requirements for reliability and limits to return on investment, especially with technology-specific projects.

4. Is there anything else that was not addressed in the Staff Proposal that you think should be considered as part of a biomethane procurement program? Please explain.

Electrochaea further suggests that it is unnecessary and restrictive of evolving technologies to define biomethane as coming from anaerobic digestion.[10] Senate Bill 1440 states "For purposes of this article, 'biomethane' means a biogas that meets the standards adopted pursuant to subdivisions (c) and (d) of Section 25421 of the Health and Safety Code for injection into a common carrier pipeline." By listing the possible sources of biomethane, the Staff Proposal unnecessarily disqualifies new technologies that were not commonly known or adequately considered at the time of writing.

Finally, Electrochaea suggests the Commission consider what core drivers might be for financing projects of significant impact. For example, in the wind and solar expansion context, the benefit from tax credits for bond financing coupled with guaranteed offtake pricing was a primary impetus for capital financing for those technologies. If renewable gas generation capacity is to compete for similar capital, similar incentives may be required, especially in places where LCFS credits may not be available as an economic incentive.

[10] Staff Proposal at 6.

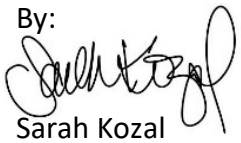
III. CONCLUSION

Electrochaea appreciates the opportunity to submit these comments.

Respectfully submitted,

Buchalter, A Professional Corporation

By:



Sarah Kozal

Counsel for Electrochaea Corporation

June 30, 2021