

February 4, 2022

The Honorable Michael S. Regan
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Renewable Fuel Standard (RFS) Program: RFS Annual Rules;
Proposed rule, 86 Fed. Reg. 72,436 (Dec. 21, 2021);
Docket ID No. EPA-HQ-OAR-2021-0324

Dear Administrator Regan:

Electrochaea appreciates the opportunity to provide comments regarding the proposed rule entitled “Renewable Fuel Standard (RFS) Program: RFS Annual Rules,” published at 86 Fed. Reg. 72,436 (Dec. 21, 2021). EPA’s proposal to formally define “produced from renewable biomass” will have the unintended consequence of excluding from the RIN program certain renewable fuels made from renewable biomass and other renewable feedstocks, thereby reducing the slate of fuels capable of addressing the need to decarbonize the U.S. transportation sector. We strongly recommend that the EPA’s proposed definition of “produced from renewable biomass” not be adopted and propose an alternative definition that addresses the EPA concern while expanding the potential for U.S. production of renewable fuel consistent with the Congressional intent and plain language of the statute.

It is essential to reduce greenhouse gas emissions (GHG). The United States has been a leader in developing a framework to support the reduction in emissions. In a continuation of this effort, in April 2021 the United States announced its Nationally Determined Contribution to the Paris Agreement to reduce by 2030 our net GHG emissions by 50-52% below 2005 levels, with a net-zero target to be achieved by 2050.¹ Now there is an urgent need to adopt and implement multiple methods to reduce GHG emissions in all sectors of our economy. Among the solutions to climate change is the production of many different types of renewable fuels for use in transportation and all other sectors of our economy. A multitude of approaches are needed to reach our climate goals.

Electrochaea produces an entirely renewable fuel made from renewable biomass

¹ The White House, “The United States of America Nationally Determined Contribution Reducing Greenhouse Gases in the United States: A 2030 Emissions Target,” April 22, 2021, <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/United%20States%20of%20America%20First/United%20States%20NDC%20April%202021%202021%20Final.pdf>.

Electrochaea is working to help achieve these goals by producing a low carbon intensity renewable fuel. This renewable fuel is renewable methane, which is identical to renewable natural gas (RNG) or biomethane, a fuel produced in the rapidly growing biogas market. Just like RNG, renewable methane produced by Electrochaea’s process is a drop-in replacement for fossil natural gas. Electrochaea produces this renewable fuel using (1) biogenic carbon dioxide produced from renewable biomass (e.g., from the raw biogas produced by landfills or anaerobic digesters) combined with (2) hydrogen generated from renewable energy (e.g., from wind, solar, hydro, geothermal, or biomass electric generating facilities). Fossil fuels are not a feedstock or a source of energy. Electrochaea’s process utilizes the 40% of raw biogas that is otherwise emitted into the atmosphere, and renewable energy from any source, thereby making full use of the renewable biomass used to produce that biogas and reducing greenhouse gas emissions from biogas production facilities and biogas upgrading facilities. This renewable fuel is undoubtedly produced from renewable biomass. Electrochaea has deployed its technology at two industrial-scale pilot sites in Denmark and Switzerland, and is actively engaged with multiple US-based utilities to support their decarbonization efforts by generating renewable gas from landfills, wastewater treatment plants and anaerobic digester operations.

EPA’s proposed definition of “produced from renewable biomass” may improperly preclude this renewable fuel technology

EPA has proposed to add the following definition of “produced from renewable biomass” to 40 C.F.R. § 80.1401: “Produced from renewable biomass means that the energy in the finished fuel or biointermediate comes from renewable biomass.”² This proposed definition would narrow the scope of what can be considered a “renewable fuel” under the RFS in a manner that is not consistent with either the text of Section 211(o) of the Clean Air Act (codified at 42 U.S.C. § 7545(o) or Congressional intent of increasing biofuel production through the RFS.³ EPA does not have authority to amend the statute via regulation, and Electrochaea does not support EPA’s proposed definition.

Congress did not specify a particular meaning for “produce”. When Congress does not provide a definition for a word, the word’s “ordinary or natural meaning” should be used.⁴ The Oxford English Dictionary defines “produce” as to “make or manufacture (a product or commodity) from components or raw materials” and to “bring (a thing) into existence from its raw materials or elements, or as the result of a process.” That is exactly what occurs with Electrochaea’s process as described above – a fuel is made/brought into existence using the components/elements of biogenic carbon dioxide from renewable biomass.⁵

The EPA’s distinction between renewable biomass and the source of the energy in the finished renewable fuel aims to preclude fuel that is partly derived from non-renewable feedstock, a determination that we support and is consistent with the statutory language at 42 U.S.C. § 7545(o). However, EPA’s rationale to exclude fuels derived from fossil sources has the consequence of improperly narrowing the scope of the RFS. EPA is correct in its interpretation to exclude transportation fuel produced “by bonding carbon atoms obtained from biogenic carbon dioxide with hydrogen atoms

² 86 Fed. Reg. at 72,485; *see also id.* at 72,479.

³ *Id.* at 72,439.

⁴ *HollyFrontier Cheyenne Ref., LLC v. Renewable Fuels Ass’n*, 141 S. Ct. 2172, 2176 (2021) (quoting *FDIC v. Meyer*, 510 U. S. 471, 476 (1994)).

⁵ Congress has also used “produced from renewable biomass” in defining “renewable chemical.” 7 U.S.C. § 8101(14). EPA’s proposed definition makes no sense in that context, and absent an express indication that Congress meant for “produced from renewable biomass” to have different meanings, the term should be interpreted in a consistent manner.

obtained from fossil fuels.”⁶ Electrochaea agrees that using fossil fuels as the energy feedstock for another fuel would not render that other fuel a “renewable fuel” as it would neither replace or reduce the quantity of fossil fuel present in a transportation fuel nor achieve a significant GHG reduction from the baseline. However, fossil fuels are not the only source of hydrogen; hydrogen can be generated from renewable energy.

EPA also notes that a number of gallon-RINs cannot be calculated under 40 C.F.R. § 80.1426(f)(4) for a fuel produced from “renewable biomass and non-renewable feedstocks” unless the renewable biomass feedstock contains energy. As a result, EPA claims “produced from renewable biomass” must mean that the energy comes from the renewable biomass. Of course, in EPA’s fossil fuel example, there is non-renewable feedstock. However, if the hydrogen is generated from renewable energy, there is no non-renewable feedstock and 40 C.F.R. § 80.1426(f)(4) is irrelevant. Moreover, EPA’s regulations are to align with the statute. Rather than narrow Congress’s broad scope of “renewable fuels” to fit EPA regulations, EPA should amend its regulations to align and fully implement Congressional intent.⁷

EPA’s reasoning to exclude fossil fuel simply does not establish that energy must come from renewable biomass in order to be considered “produced from renewable biomass.” Unfortunately, EPA’s approach to preclude fuels comprised partly of non-renewable sources will impermissibly and entirely preclude certain renewable fuel made with renewable biomass.

The Energy Independence and Security Act clearly defines renewable fuel.

The Energy Independence and Security Act of 2007 defines renewable fuel as “fuel that is produced from renewable biomass and that is used to replace or reduce the quantity of fossil fuel present in a transportation fuel.”⁸ The plain language of the text makes clear that renewable fuel is intended to lower the proportion of fossil-derived components in transportation fuel. We agree with EPA’s view that it would be contrary to the statute to include a pathway for renewable fuel from which the energy is derived from non-renewable sources.

While Congress may not have expressly contemplated at the time technologies that create renewable fuel by combining renewable biomass with a separate renewable source for hydrogen, Congress’ plain language allows such fuels to be “renewable fuels” under the RFS. There is no clear basis for EPA precluding fuels that are entirely renewable even if only the carbon originates from renewable biomass. A fuel of this type meets both definitions at 42 U.S.C. § 7545(o)(1)(I) and (J).

EPA should clarify that fuel that is made from renewable biomass and is entirely renewable is “produced from renewable biomass” and hence “renewable fuel.”

Biofuels produced from renewable biomass and hydrogen from renewable energy are renewable fuels consistent with Congress’s plain language and intent. Accordingly, we recommend defining “produced from renewable biomass” as follows:

⁶ 86 Fed. Reg. at 72,479 (emphasis added).

⁷ For the same reason, the reference to “energy basis” in 40 C.F.R. § 80.1415(c)(1) does not evidence that Congress intended to require that the energy must come from renewable biomass.

⁸ 42 USC § 7545(o)(1)(J)

Produced from renewable biomass means that the finished fuel or biointermediate comes, in whole or in part, from renewable biomass and without use of any feedstock derived from fossil fuels.

This definition would ensure that EPA does not impermissibly preclude renewable fuel made from renewable biomass from participating in the RFS program. Our proposed definition also avoids improperly allowing non-renewable sources of energy to be defined as renewable fuel.

EPA risks limiting further innovation in renewable fuels

When the RFS was established nearly two decades ago, the ability to produce a liquid fuel (ethanol) to replace gasoline was the most prominently qualifying technology. Since then, additional means to produce fuels from renewable biomass have been developed. EPA risks limiting future development by unduly narrowing its regulations to exclude fuels that are produced from renewable biomass, even if components are derived from other renewable resources.

It is imperative to use multiple means to achieve the goals of the Energy Security and Independence Act of 2007 and U.S. climate goals. Consistent with Congressional intent and recognizing the advances in renewable fuel technologies over the past two decades, the RFS should encourage investment in and development of new industries around emerging and future technologies and help to further decarbonize the energy sector using sustainable biomass resources. Any fuel produced from renewable biomass and other renewable feedstock that would displace fossil fuels and result in a lifecycle assessment of the required GHG emission reduction should constitute a renewable fuel under the RFS. EPA should amend its regulations as we propose to fully enable this outcome, which is entirely consistent with Congress's definition of "renewable fuel."

We are pleased to attached letters of support from the following organizations:

- Avista Corporation, Spokane, WA, Jason Thackston, Senior Vice President, Energy Resources
- NW Natural, Portland, OR, Mary Moerlins, Director of Environmental Policy and Corporate Responsibility
- Plug Power Inc., Latham, NY, Erin Lane, Vice President of Public Affairs
- Roland Berger LP, Chicago, IL, Robert Zabors, Senior Partner, and William Kemp, Director
- Focus First LLC, St. Louis, MO, Victoria Gonzalez, Member
- Oscar Farms, LLC, Ballwin, MO, Stephen P. Welker, Owner and Manager

The opportunity to generate RINs is needed to attract investors, renewable fuel users and develop the business case and to construct plants at a large enough scale to make a difference. Thank you for the opportunity to provide our comments on why EPA should not preclude renewable fuels produced from renewable biomass and renewable energy from participating in the RFS.

Sincerely,



Mich Hein, CEO
Electrochaea Corporation
Mich.Hein@electrochaea.com

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The Honorable Michael S. Regan
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Renewable Fuel Standard (RFS) Program: RFS Annual Rules;
Proposed rule, 86 Fed. Reg. 72,436 (Dec. 21, 2021);
Docket ID No. EPA-HQ-OAR-2021-0324

Dear Administrator Regan:

Avista Corporation is a natural gas and electric utility operating in several states within the Pacific Northwest and Alaska. Avista operates as a gas local distribution company (LDC) in the states of Idaho, Oregon, and Washington, in which the latter two states have adopted some of the country's first ever legislation designed to reduce greenhouse gas emissions (GHG's). Avista has also set its own ambitious goal to serve our customers with 100% clean energy by 2045. This corporate emissions reduction goal includes natural gas emissions reductions of 30% by 2030, reaching 100% by 2045.

In our effort to decarbonize our natural gas system, Avista believes that many solutions will be necessary to reach our goals. These solutions will include a host of solutions including innovative technologies and low carbon fuel approaches that necessitate consideration with meaningful GHG reduction in mind.

We are pleased to provide this letter of support for Electrochaea Corporation's comment on the Proposed rule published December 21, 2021, and we have requested that our letter be included with their submission. We concur with Electrochaea that the proposed definition of "produced from renewable biomass" should not be adopted. The proposed definition improperly excludes technologies that can expand the production of renewable methane from biogas as well as reducing the release of CO₂. We also concur that refining the definition of renewable fuel is important to support the production of a greater range of renewable fuels for the transportation market and beyond.

Achievement of our country's GHG emission reduction goals will require deployment of a range of technologies, both well-established and new. Avista finds it imperative that the EPA supports the Congressional intent to expand the availability of renewable fuels for transportation, while decreasing GHG emissions.

Thank you.

A handwritten signature in black ink, appearing to read "J Thackston", is located below the "Thank you." text.

Jason Thackston
Senior Vice President, Energy Resources
& Environmental Compliance Officer

February 4, 2022

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Dear Administrator Regan:

NW Natural is a local distribution company that currently provides natural gas service to approximately 2.5 million people in more than 140 communities in Oregon and Southwest Washington. We have set a goal to achieve a carbon neutral pipeline by 2050 and are on our way to achieve that with significant focus on the development of renewable natural gas (RNG) and clean hydrogen. We believe it is essential that all viable low carbon solutions be implemented to reduce emissions economy wide. Supportive legislation and definitions that are inclusive of all emission reducing technologies are key to collectively moving fast towards our shared target of a low carbon future.

We are pleased to provide this letter of support for Electrochaea Corporation's comment on the Proposed rule published Dec. 21, 2021, and have requested that our letter be included with their submission. We concur with Electrochaea that the proposed definition of "produced from renewable biomass" should not be adopted. The proposed definition improperly excludes technologies that can expand the production of renewable methane from biogas as well as reducing the release of CO₂. We also concur that refining the definition of renewable fuel is important to support the production of a greater range of renewable fuels for the transportation market and beyond.

Achievement of our country's GHG emission reduction goals will require deployment of a range of technologies, both well-established and new. NW Natural finds it imperative that the EPA supports the Congressional intent to expand the availability of renewable fuels for transportation, while decreasing GHG emissions.

Thank you.

Sincerely,



Mary Moerlins (she, her)

NW Natural – Director of Environmental Policy & Corporate Responsibility

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Dear Administrator Regan:

Plug Power Inc.

I am offering this letter on behalf of Plug Power Inc. We are a leading provider of turnkey hydrogen solutions for the global green hydrogen economy. Our innovative technology powers electric motors with hydrogen fuel cells amid an ongoing paradigm shift in the power, energy, and transportation industries to address climate change and energy security, while providing efficiency gains and meeting sustainability goals.

We are pleased to provide this letter offer Electrochaea Corporation's comment on the Proposed rule published December 21, 2021. We concur with Electrochaea that the proposed definition of "produced from renewable biomass" should not be adopted. The proposed definition potentially excludes technologies – specifically electrolytic hydrogen – which can expand the production of renewable methane from biogas and reduce greenhouse gas emissions. We also concur that refining the definition of renewable fuel is important to support the production of a greater range of renewable fuels for the transportation market and beyond.

Achievement of our country's greenhouse gas emission reduction goals will require deployment of a range of technologies, both well-established and new. Plug Power finds it imperative that the EPA supports the Congressional intent to expand the availability of renewable fuels for transportation, while decreasing greenhouse gas emissions.

Thank you.

Sincerely,

A handwritten signature in black ink that reads "Erin Lane".

Erin Lane
Vice President of Public Affairs



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Dear Administrator Regan:

Roland Berger LP is the U.S. entity of Roland Berger LLC, a global management consulting firm with approximately 3,000 employees around the world. Our Energy industry practice in the U.S. is growing rapidly, and is focused on providing strategic advice around the energy transition. We advise clients in the electricity and natural gas industries, as well as investors in the energy sector, OEMs, and emerging energy technology companies. Our professionals have testified in a multitude of regulatory proceedings.

Roland Berger has a strong corporate commitment to supporting sustainable market-based solutions to environmental challenges. Sustainability and Climate Action is one of our four core innovation platforms. We are known as a firm that combines strategic insights with technical depth and a commitment to socially responsible business models.

The Energy industry team at Roland Berger has helped many clients with decarbonization planning, identifying key technology pathways that are needed to achieve their GHG abatement goals. In particular, we have analyzed the most cost-effective pathways for gas utilities to decarbonize the current end uses of natural gas.¹ Migrating from fossil gas to a low carbon gas mix of green hydrogen and renewable methane (both biogenic and synthetic) would make the gas grid "green," while leveraging the tremendous value of the

Bob Zabors
Partner

Bill Kemp
Director

Amsterdam
Bangkok
Barcelona
Beijing
Beirut
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Casablanca
Chennai
Chicago
Detroit
Doha
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Riyadh
Rome
São Paulo
Seoul
Shanghai
Singapore
Stockholm
Stuttgart
Taipei
Tokyo
Vienna
Warsaw
Yangon
Zagreb
Zurich

¹ See *Greenhouse Gas Emission Reduction Pathways*, American Gas Association, 2018, and *Opportunities for Reducing Greenhouse Gas Emissions Through Emerging Natural Gas Direct-Use Technologies*, American Gas Foundation, 2019

existing gas transmission and distribution infrastructure. In many circumstances the total energy system cost would lower than for electrification of end uses such as space heating.

Innovations that reduce the cost of the methanation process, to make net zero methane from green hydrogen and biogenic, otherwise emitted carbon dioxide, are important for allowing low carbon molecular fuels to fulfill their role in addressing the climate change challenge. We have worked with numerous clients in the renewable fuel value chain in North America and Europe to expand the range and increase the contribution of renewable methane solutions.

From a public policy perspective, our strategic advice is based on a belief that legislation and regulation should define policy goals in a technology-agnostic manner so market-driven innovation can develop efficient and cost-effective technology pathways to achieve those goals. Maintaining affordability and access to clean energy should be important considerations to promote affordability and environmental justice in the energy transition.

Specifically, in that context, EPA's proposed definition of renewable methane is unnecessarily narrow and not technology neutral. It excludes other paths to producing renewable methane, from sources other than renewable biomass, that show promise for being less costly and more scalable.

We are pleased to provide this letter to highlight Electrochaea Corporation's comment on the Proposed rule published Dec. 21, 2021, and they have requested that our letter be included with their submission. We concur with Electrochaea that the proposed definition of "produced from renewable biomass" excludes technologies that can expand the production of renewable methane from biogas as well as reducing the release of CO₂. We also concur that a thoughtful and inclusive definition of renewable fuel is important to support the production of a greater range of renewable fuels for the transportation market and beyond.

Achievement of our country's GHG emission reduction goals will require deployment of a range of technologies, both well-established and new. Roland Berger LP supports Electrochaea's comment that the EPA act consistently with the Congressional intent to expand the availability of affordable and innovatively sourced renewable fuels for transportation, while decreasing GHG emissions.

Thank you for your consideration.

Sincerely,

Roland Berger LP



Robert Zabors
Senior Partner



William Kemp
Director

Focus First LLC
Investment Partnership

February 4, 2022

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Dear Administrator Regan:

I have spent the last twenty years as an entrepreneur and investor in sustainable energy technologies. In 2010, I co-founded Nidus Partners (Focus First LLC, Managing Partner) because we and many large corporations recognized the need for new technologies to address carbon reduction. Nidus Partners assessed over four hundred nascent technologies in the space, selecting only a few for investment given the time and significant financial burden of advancing these types of technologies. Electrochaea was one of these.

As a co-founder and Board Member of Electrochaea, I have watched the company progress from lab-scale to proven 1MW grid injectable renewable gas projects. Electrochaea's technology is viable, scalable and affordable, however the narrow, proposed definition for "renewable fuel" under the RFS would limit the ability of Electrochaea to generate RINs. This change would put Electrochaea at a significant disadvantage and would hamper the commercialization of power-to-gas technologies in general.

Given the current state of climate change and the U.S. position on carbon reduction, we need to support a broad array of technologies to find the few viable one that will help us meet our goals. Therefore, I am writing this letter of support for Electrochaea Corporation's comment with respect to the RFS Program and have requested that it be included with their submission.

I concur with Electrochaea that the proposed EPA rules defining the scope of renewable fuels, and especially regarding "produced from renewable biomass", is too limiting. The proposed definition improperly excludes potential technologies for expanding the production of renewable methane from biogas as well as reducing the release of CO2.

I encourage you to consider Electrochaea's comments relative to the proposed rule considering the intent of existing legislation, as well as the need for a broader imperative in renewable fuel technologies. Thank you.

Sincerely,



Victoria Gonzalez
Focus First LLC, Member

Oscar Farms, LLC

February 4, 2022

The Honorable Michael S. Regan
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

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Docket ID No. EPA-HQ-OAR-2021-0324

Dear Administrator Regan:

I appreciate the opportunity to provide comments regarding the proposed rule entitled "Renewable Fuel Standard (RFS) Program: RFS Annual Rules," published at 86 Fed. Reg. 72,436 (Dec. 21, 2021).

I have spent more than 35 years working in the chemical and agricultural industries, own and manage a farm, and actively follow and invest in technologies to help meet the world's needs to sustainably produce food and energy. I own and manage a corn and soybean farm in western MO (Oscar Farms, LLC), and also work in the venture capital industry supporting companies that are focused on improving our food and ag industries by developing new technologies to sustainably produce food globally. One of my key focus areas in these endeavors is Climate Change and greenhouse gas (GHG) emissions. Managing climate change and reducing GHG emissions is an important issue which must be approached from a variety of technologies and perspectives, that include local, regional and global level solutions. For this reason, I am an investor in Electrochaea. As a farm owner, I may selfishly support the proposed definition of renewable fuels as "produced from renewable biomass", but I recognize that limiting this definition will limit multiple other technologies that will help address the GHG problem. Limiting the technologies to address the problem is not a favorable direction. The proposed definition for produced renewable biomass is too narrow and should not be adopted.

Therefore, I am pleased to provide this letter of support for Electrochaea Corporation's comment in respect of the RFS Program and have requested that it be included with their submission. I concur with Electrochaea that the proposed EPA rules defining the scope of renewable fuels, especially regarding "produced from renewable biomass", is excessively limiting. Achievement of our country's GHG emission reduction goals will require the deployment of a range of technologies, both well-established and new. The proposed definitions improperly exclude potential technologies for expanding the production of renewable methane from biogas as well as reducing the release of CO2.

I welcome EPA's reconsideration of this proposed rule in light of existing legislation as well as the broader imperative of recognizing the advances in renewable fuel technologies over the past. Thank you for your consideration,

Sincerely,



Stephen P Welker,
Owner and Manager, Oscar Farms, LLC