

Iogen Corporation

Comments on 2018 LCFS Preliminary Draft Regulatory Amendment Text, September 22, 2017
group meeting
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Transmitted by Email to LCFSworkshop@arb.ca.gov

October 06, 2017

Transportation Fuels Branch
Industrial Strategies Division
California Air Resources Board

Re: Comments on 2018 LCFS Preliminary Draft Regulatory Amendment Text, Sep 22/17
meeting

INTRODUCTION

Iogen Corporation (“Iogen”) would like to thank California’s Air Resource Board (ARB) for the opportunity to comment on the Sep 22, 2017, Public Discussion on the 2018 LCFS Preliminary Draft Regulatory Amendment Text.

Iogen is one of the world’s leading firms in the field of cellulosic biofuels. We have been in the cellulosic biofuel business for over 30 years, invested roughly \$500 million in research, development and demonstration and have more than 300 issued and pending patents. We have implemented our cellulosic ethanol production technology in Brazil at Raizen Energia’s 10 million gallon per year Costa Pinto Facility, which is now producing cellulosic ethanol from bagasse. We are also very active in the deployment of biogas-based cellulosic biofuels in the United States. We are currently distributing about 17 million gallons per year (ethanol equivalent) of biogas-based cellulosic biofuel to Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) locations in the United States, and are planning more than 100 million gallons per year of biogas-based production in the next three years.

We are excited about the potential for cellulosic biofuels in America and specifically California. There is an abundance of feedstock, an abundance of fuel demand, and current laws that recognize the unique value and potential of cellulosic biofuels. In particular, we believe there is tremendous short term potential for the use of biogas-derived renewable hydrogen by California refiners to make “renewable hydrogen content” (RHC) in California fuels. Under the current Renewable Hydrogen Refinery Credit Pilot Program (RHRCPP), the generation and refinery use of renewable hydrogen is eligible for the generation of LCFS credits. We applaud California’s forward thinking approach in adopting these regulations.

We estimate that the potential GHG reduction to be achieved using biogas for refinery incorporation of renewable hydrogen in fuels is about 4.5 million tonnes of CO₂ per year. This reduction would be a direct result of avoiding the extraction and use of fossil natural gas that ends up as refinery-produced transportation fuel used in California.

US EPA approval of RHC in gasoline and diesel for RIN generation under the federal Renewable Fuel Standard (RFS) will unlock this new and economical means for GHG reduction in the

California fuel pool. Until such time, we believe the commercial adoption of biogas use under the RHRCP Program will remain limited. The economic incentive or RIN that can be generated outside California far exceeds the value of LCFS credits that can be generated within California (RIN value is more than 5X the LCFS credit value in CNG). Currently, EPA has not made approval of a pathway for RIN generation with RHC a priority. We believe the support of California-based refiners and CARB could help accelerate adoption. We welcome CARB's support in this respect.

We are making comments herein in association with the Preliminary Draft Regulatory Amendment Text workshop because refinery renewable hydrogen use remains a potentially simple and cost effective way to reduce the carbon intensity of fuels used in California. Our comments relate to the provisions of 94589(g) as follows.

1) We support the simplification of using the CI difference between RNG and NG as the basis for credits.

We believe the functional GHG savings is derived from the displacement of natural gas with renewable natural used gas for the production of hydrogen that is used to make fuels sold in California. We support CARB's change to use the CI difference of RNG and NG for quantifying the benefit. We believe this is an improvement over the prior formula, because it more closely relates to the actual GHG benefits, and because the prior formula would have given different levels of credits to different refineries. The new approach also simplifies the calculations, reducing administrative burdens for CARB and market participants. It also permits a level playing field for all refineries, which should serve program objectives.

2) We believe the RNG eligible for the Renewable Hydrogen Refinery Credit Program should be the amount fed as feedstock used to make hydrogen used in refineries.

Research shows that a dominant fraction of hydrogen used in refineries is ultimately incorporated in the gasoline and diesel products. We believe RNG that ends as renewable hydrogen incorporated into fuels sold in California appropriately deserves to earn LCFS credits. This approach competes with other renewable fuels that displace the use of fossil fuels used in California transportation. The RNG used for feedstock used in refinery hydrogen production is a reasonable method to approximate the quantity contained within transportation fuels.

We believe the general use of RNG for process heat in refineries is questionable as eligible under the LCFS. Emissions from process energy generally belong within the AB32 program.

We believe that the amount of hydrogen used as feedstock in hydrogen production is easily measurable and quantified, and that the approach is no more burdensome than the value proposed.

Further, we believe that CARB should not define the eligible RNG as only that now "delivered to a refinery". We estimate that about half of the hydrogen produced for refineries is produced by third party organizations supplying the refineries. Measuring RNG fed to these hydrogen plants is not difficult or burdensome. Our proposed language is below.

3) We believe that the formula for credit generation should change to provide a level playing field for all refiners.

As written, the formula reduces the amount of credits that could be generated for a given amount of RNG by the ratio of produced fuel that is sold in California. This would lead to a different value of RNG for every refinery, and would not create a level demand for RNG among users. Further, the proposed approach would penalize a California refinery that exports fuel in comparison with a California refinery that serves only the local market. We believe this approach is contrary to LCFS program objectives.

We believe that refineries should not be discriminated against on the basis of the fraction of fuel not sold in California, and that RNG should have the same value for all refiners. This is appropriate because the amount of CO₂ displaced is based upon the amount of RNG used.

However, California should not give credits for displaced natural gas that is not associated with fuel sold in California. We believe CARB ought to use a simple method to associate RNG and hydrogen with fuel sold in California. We therefore would recommend that the formula should cap the amount of RNG that can be associated with fuel sold in California by the fraction of fuel sold in California multiplied by the total feedstock used for refinery hydrogen production divided the total fuel produced.

We would propose the following formula:

$$Credits_{RIC}^H = \left((CI_{NG} - CI_{RNG}) \times E_{RNG} \times C \right)$$

Where

E_{RNG} is the lesser of:

- a) amount of RNG, in MJ, fed as feedstock to the hydrogen production units serving the refinery, and
- b) E_{RNGmax}

Where

$$E_{RNGmax} = \left(Volume^{XD} \times \frac{E_{NG+RNG}}{Volume^{Total}} \right)$$

And

E_{NG+RNG} is the amount of NG and RNG, in MJ, fed as feedstock to the hydrogen production units serving the refinery,

And

All other terms are as defined in the proposed regulation.

4) We believe CARB should ultimately not limit the generation or trading of LCFS credits generated from renewable hydrogen associated with fuels sold in California

- Given the goal of the LCFS is to have a technology-neutral platform for decarbonizing the California fuel pool; we believe limiting the adoption of individual solutions (such as fuels that contain renewable hydrogen) is not consistent with this goal.
- We believe the renewable hydrogen provision, with the proposed language, maintains an appropriate association between the natural gas used for hydrogen and the fuel sold in California.
- We believe there is a certain amount of overhead associated with the adoption of refinery use of renewable hydrogen, and there should not be a restriction on one refiner's ability to transfer LCFS credit to another refinery. The transferability of LCFS credits is a feature that contributes to market efficiency that is in the interest of California consumers.
- We recognize CARB's interest in proving the viability of the refinery renewable hydrogen pathway before opening up broad adoption. We look forward to working with CARB to address concerns with this pathway.

CONCLUSION

Refinery incorporation of renewable hydrogen in fossil fuels is a large opportunity for reduction of GHG emissions from California transportation fuels. The current regulations are workable, and we look forward to cooperating and discussing with CARB on implementation.

As identified herein, we believe that the regulations can be further developed, clarified and improved.

Should CARB have any questions, require any information, or be interested in assistance in understanding our analyses or positions, we welcome further discussion and review.

Sincerely,



Patrick J. Foody
Executive Vice President and Chief Operating Officer
Iogen Biogas Corporation