solazyme

June 19, 2015

VIA ELECTRONIC FILING

Clerk of the Board
Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: The Proposed Re-Adoption of the Low Carbon Fuel Standard

COMMENTS OF SOLAZYME, INC. ("Solazyme")

Solazyme appreciates the opportunity to comment on the California Air Resources Board's (ARB's) proposal for the 2015 Re-Adoption of the Low Carbon Fuel Standard (LCFS), and we are supportive of the LCFS. Solazyme was founded in California over 12 years ago and is based in South San Francisco. We are in commercial production and already selling biofuel to private fleets in the US, and we are eager to supply advanced biofuels for the California market.

Solazyme understands that the ARB is trying to address concerns over Carbon Intensity (CI) data reporting compliance for new pathways Section 95488 (d)(2). Solazyme agrees that there needs to be a solution to this matter, although we feel that this proposal creates a serious barrier for any new advanced biofuel coming to market through onerous upfront requirements. In fact, the undue burdens created in this proposal are truly a show-stopper for advanced biofuels coming to market in California. Instead, the new requirements as written favor incumbents, such as first generation biofuels, who have legacy operations. Below we outline some areas of concern and look forward to ARB's consideration of these issues.

Introduction to Solazyme

Solazyme has pioneered an industrial biotechnology platform that harnesses the prolific oil-producing ability of microalgae. Our platform is feedstock flexible and can utilize a wide variety of plant-based sugars such as sugarcane-based sucrose, corn-based dextrose, and sugar from other biomass sources including cellulosics. By growing our proprietary microalgae in the absence of light using fermentation tanks to convert photosynthetic plant sugars into oil, we are in effect utilizing "indirect photosynthesis." Solazyme develops and manufactures products for the food, skin-care, industrial chemical and lubricants, and industrial/military fuels sectors.

Solazyme is Currently Producing Advanced Biofuels

At Solazyme, we are creating clean, low carbon, renewable algae-derived advanced biofuels. The company's tailored oils are refined into cost-effective, high-quality, on-spec "drop-in" replacements for diesel and jet fuels. Solazyme's algae-derived fuels are compatible with existing infrastructure, meet industry specifications, and can be used with factory-standard engines, without modifications. The company has worked with Chevron, UOP Honeywell, and other industry leading refining partners, to

produce Soladiesel$_{RD}$® renewable diesel, Soladiesel® renewable diesel for ships, and Solajet® renewable jet fuel for both military and commercial application testing.

- Soladiesel$_{BD}$® and Soladiesel$_{RD}$® are the first algae-derived fuels to be successfully road-tested in blended and unblended (B100) forms for thousands of miles in unmodified vehicles. Both fuels are compatible with existing infrastructures, meet current US and European fuel specifications, and may be used in factory-standard diesel engines without modification.
- Soladiesel$_{RD}$® (Renewable #2 Diesel) is ASTM D975 compliant and has demonstrated a cetane rating of over 74, which is more than 60 percent better than standard US diesel fuel. Also, Solazyme produces Soladiesel® that meets the HRD-76 military specifications for ships. It was used as the base fuel for testing and certification of renewable F-76.
- Solajet® is the world's first 100 percent algae-derived jet fuel, for both military and commercial applications. The fuel has been used in a US Navy testing and certification program. Solajet® meets all military specifications for HRJ-5 jet fuel and all non-petroleum commercial specifications for ASTM D 7566.

General Comments

Provisional Pathways

The language in Section 95488, and specifically 95488(d)(2), is greatly concerning to Solazyme because of the upfront requirements for a new pathway. For instance, the proposal requires applicants to have been in full commercial production for at least one full calendar quarter before applying for a new pathway. This timeline is not feasible for two reasons. First, biofuel refiners use or blend a broad array of feedstocks when making biodiesel or renewable diesel (e.g., cooking oil, tallow, soy oil, etc.). The dynamic nature of feedstocks processed at a facility over the course of one quarter would make it near impossible to generate consistent data for one new feedstock.

In addition, this timeline does not match the natural course of the commercialization process for a new biofuel. It is standard practice for biofuel refiners to take time to scale up a new feedstock while it is introduced. That means that the refiners will not generate a quarter's worth of consistent data on the new feedstock during its early adoption. This requirement will therefore significantly delay the opportunity for a new pathway and delay advanced biofuels from being introduced into California. It creates an undue administrative burden on the refiners to test and qualify new feedstocks and will greatly reduce their enthusiasm to incorporate new feedstocks. Instead, this requirement rewards incumbents.

Monetizing the LCFS credits are also delayed as the rule states that the applicant is provided only "provisional" credits and may not sell credits for two years. This is a stonewall barrier for innovative advanced biofuels producers and refiners alike. Without the ability to monetize credits for two years, the economic incentive to sell new advanced biofuels in California is basically gone. Once again, this requirement heavily favors incumbents.

Any new technology coming to market, and expanding, requires capital to build facilities. In the event that ARB requires a 2 year monetization hold, with the potential to withhold credits, this will also

impact the ability of new entrants to finance. Financiers will typically need to discount any credit until it is confirmed. Start-up, and the first years of operation, are also the most critical for a new plant in terms of cash flow. The current proposal makes that initial period worse, and thus increases the cost of commissioning significantly.

Furthermore, as new feedstock producers enter the California market, this will create a proliferation of pathways for ARB staff to handle. Most feedstock providers will partner with numerous refiners to produce the end product: biodiesel or renewable diesel. This means there will be a two year process for each refiner, as well as a new pathway application for each refiner, for the ARB to review.

California and the ARB have typically lead adoption for new technologies, and we hope this legacy continues, particularly at a time when so many technologies are poised to enter the market.

Table 7 Temporary FOCs for Fuels with Indeterminate CIs

Microalgae naturally make triglyceride oils, just like the oils made by any animal or plant-based sources. In fact, several types of microorganisms are used by many other companies as the basis for a new generation of advanced biofuels. Table 7. *Temporary FOCs for Fuels with Indeterminate CIs,* however, does not include a default pathway for fuels derived from these sources. Solazyme believes that the ARB should add a category for "Any feedstock *derived from microorganisms*" for Biodiesel and Renewable Diesel fuels. With this new generation of advanced biofuels coming into commercialization, this will allow for California to benefit from new and broad innovation.

Solazyme understands that lack of compliance for CI verification after two years is an important concern. However, it would seem that this can be addressed by withholding the right to sell credits until compliance is met rather than putting in place requirements for full operational data upfront for new advanced biofuel providers looking to enter the market. We believe this will significantly delay (or halt) the entry of advanced biofuels to the California market.

We appreciate this opportunity to provide comments. Please contact me if you have any questions or require additional information.

Sincerely,

p.p.

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