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November 19, 2008

Christina Zhang-Tillman
California Air Resources Board
PO Box 2815
Sacramento, CA 95812-2815

Re: Low Carbon Fuel Standard

Dear ARB:

On behalf of Choren USA, we are pleased to provide the following comments on California's proposed Low Carbon Fuel Standard (LCFS). Choren is a provider of gasification technology that can be used to produce advanced renewable synthetic fuels (including renewable diesel) that is low in emissions of both GHGs and conventional pollutants. In partnership with Daimler, Volkswagen, and Shell, Choren has constructed a commercial scale synfuel plant in Freiberg, Germany, and is currently evaluating broad opportunities in the U.S. market. Choren commends California's efforts with the LCFS and believes the LCFS provides greater incentives to low carbon fuel producers than the federal RFS. However, Choren has the following suggestions for improving the LCFS:

I. Definition of Renewable Diesel

While Choren's fuel would qualify as a renewable diesel under the proposed definition, we believe the LCFS should have a separate category for synthetic fuels derived from the

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gasification process. Synfuels derived from coal, natural gas or biomass should be treated similarly, while of course accounting for the varying carbon intensities of the respective processes. Thus, we believe that gasification-derived renewable diesel is best paired with other synfuels rather than other renewable diesels derived from dissimilar processes.

II. Credit for Diesel Efficiency

Choren strongly supports a unitary LCFS that sets an average carbon intensity for the entire fuel pool. Separate standards for diesel and gasoline undermine the fuel neutrality of a performance-based LCFS from the outset. The UC Berkeley study, which is heavily relied upon by CARB in this rulemaking, notes that diesel enjoys a 22% efficiency advantage over gasoline and recommends that diesel passenger vehicle drive train efficiencies be accounted for in the standard. Increased use of diesel fuel in passenger vehicles offers immediate carbon benefits that should not be ignored by artificially bifurcating the LCFS. If CARB is concerned about anticipated increases in heavy duty diesel for transport of goods being used as artificial compliance credits, it can design the LCFS to only allow displacement of gasoline by light duty diesel vehicles only, as articulated in the example of an Energy Economy Ratio (EER) calculation for diesel from light duty vehicles in Appendix B of the supporting documentation.

Choren also recommends that the LCFS allow for the possibility that some renewable diesel fuels are more efficient than conventional diesel they are displacing. Table 7 of the discussion draft currently assigns biomass based diesel blends an EER value of 1.0 as compared to conventional diesel, which may be an adequate assumption for most biomass-based diesels. However, we encourage CARB to review the attached study of gas to liquids (GTL) synfuel

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(chemically nearly identical to BTL synfuel), which notes that synfuels have an additional 2-3% efficiency advantage over conventional diesel.

We understand that some commenters believe that vehicle efficiency is best left to the AB 1493 vehicle standards and that the LCFS should be determined on a well-to-tank basis only. Whatever CARB ultimately elects to do, under no circumstances should the EER ratio apply to some vehicle types and not others. The LCFS is intended to be a fuel neutral performance standard, and applying EER ratios to some vehicles and not others would undermine the basic tenets of a fuel-neutral performance standard and compromise the ability of the LCFS to deliver the most economically efficient solutions.

III. Air Quality Benefits

While CARB pays considerable attention in the draft to analyzing the potential multimedia pollution impacts of the LCFS, it fails to consider potential air quality benefits or provide any mechanism for crediting fuels that improve the performance of conventional fuels. As currently constituted, the LCFS treats two fuels with identical carbon intensities the same regardless of whether one fuel has vastly different air quality impacts than the other. The attached Daimler GTL study concluded that synfuels enjoy substantially reduced emissions of PM, CO, and Hydrocarbons while also reducing NOx, even when compared to European sulfur-free diesel. These emissions benefits would be magnified when compared to American ultra low sulfur diesel. Notably, Choren's fuel, even if blended in small quantities, offers synergistic benefits to the air quality impacts of the blended fuel. For example, a 3% blend would yield far more than 3% better emissions performance as compared to conventional diesel. While all fuels

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must of course meet California's standards for gasoline and diesel, the credit mechanism should encourage fuels that can go beyond this regulatory floor. With proper incentives for cleaner renewable diesel, we believe that the concerns of several commenters regarding the "dieselization" of the vehicle fleet and the attendant increase of emissions would be assuaged.

IV. Carbon Intensity Analysis

Choren supports CARB's work on quantifying emissions from the full fuel cycle, including emissions from indirect land use changes. As CARB notes in the supporting documentation, advanced renewable diesel from non-crop based cellulosic feedstocks does not have a land use change impact. As Choren's feedstocks are not derived from arable land, we believe that we can deliver low carbon fuel regardless of the methodology that CARB employs. However, Choren opposes the requirement that customized lookup table values yield a value more than 10% better than the standard methodology (the "10-10" substantiality requirement). A regulated party that is willing to undergo the additional expense of providing specific data and records should be able to use these values as long as they yield greater than a *de minimus* difference. Choren believes that differences well below 10% could be very significant from a business perspective and recommends a *de minimus* value closer to 5%.

V. Innovation Credits

While a 10% reduction in carbon intensity of transportation fuels may be met by a combination of moderate measures, California's ultimate ambitions under AB 32 will require more drastic decreases in the carbon intensity of transportation fuels. As such, California should send an adequate market signal to encourage the production of ultra-low carbon fuels. Choren

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supports the system of innovation credits recommended for consideration in the UC Berkeley study. Breakthrough technologies will initially be produced in only very low volumes, and a linear credit allocation system would not properly reward the substantial investment that will be required to produce ultra low carbon fuels. For example, the amount of credits yielded by a 3% renewable diesel blend may not justify the substantial investment needed to bring renewable diesel to market.

The supporting documentation for the draft LCFS states without explanation that CARB staff recommends that innovation credits not be included in the LCFS. We encourage CARB to revisit this decision and consider the role that innovation credits can play in helping California reach the long term goals of AB 32. In the alternative, CARB should consider a parallel ultra low carbon volume standard as discussed in the March concept outline. Without a strong long term market signal, California may find that its options for carbon reductions from the fuel pool are not appreciably different in 2020 than they were in 2010.

VI. Credit Trading

Choren does not believe that the credit market should only be limited to obligated parties. In order to promote liquidity in the credit market, CARB should not unnecessarily restrict the parties that can buy sell or trade credits. We note that EPA found it unnecessary in the RFS-I rulemaking to so restrict the credit market, noting that expanding the number of parties that can hold credits minimizes the potential for any single party to exercise market power. This concern is especially relevant in California because the seven largest oil companies supply about 90% of the gasoline sold in California.

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If you have any questions, please do not hesitate to contact us.

Sincerely,

A handwritten signature in black ink, appearing to read "Alex Menotti". The signature is written in a cursive style with a long, sweeping horizontal line extending from the end of the name.

William M. Guerry
Alexander D. Menotti