July 5, 2018

Chair Mary D. Nichols
Air Resources Board
1001 I Street
Sacramento, CA 95812

(Comment submitted electronically via LCFS Portal)

RE: LCFS18- Request for clarifying language in proposed new subsection 17 CCR §95488.9(f), "Special Circumstances for Fuel Pathway Application"

Dear Chair Nichols,

Fulcrum BioEnergy, Inc. ("Fulcrum") appreciates the opportunity to provide comments regarding the Air Resources Board's ("ARB") proposed regulations to revise the Low Carbon Fuel Standard ("Proposed Regulations"). Fulcrum is a world leader in the production of low carbon fuels from post-separated municipal solid waste ("Separated MSW"). This Comment requests that clarifying language be inserted into a new subsection pertaining to "Carbon Intensities that Reflect Avoided Methane Emissions". The specific provision referenced is 17 CCR §95488.9(f).

As further discussed below, Fulcrum has received a very low carbon intensity ("CI") score for the transportation fuel that it will produce. Fulcrum is requesting this clarification in the regulation because avoided methane emissions from landfill-diverted organics are an important component of Fulcrum's very low CI score.

Fulcrum's Next Generation Biofuel Processing Technology

Fulcrum is the parent company of Fulcrum Sierra BioFuels, LLC ("Sierra BioFuels"). Sierra BioFuels is constructing and will own and operate a commercial scale low carbon fuel production facility comprised of a Feedstock Processing Facility and a Biorefinery (together the "Sierra BioFuels Plant"). The Feedstock Processing Facility is operational and is located near the Lockwood Regional Landfill in Storey County, Nevada. The Biorefinery is located approximately 20 miles east of Reno in the Tahoe-Reno Industrial Center. The Sierra BioFuels Plant will transform Separated MSW into very low carbon diesel fuel that is anticipated to meet ARB's stringent future standard for low emission diesel fuel.[1] The Feedstock Processing Facility will receive Separated MSW that would

[1] See Air Resources Board, Mobile Source Strategy, May 2016, (low emission diesel specifications anticipated to be less than one percent aromatics, near zero sulfur, and a CI of 30-60 gCO2e/MJ), https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf (last viewed September 12, 2016) at 153-155.

4900 Hopyard Road, Suite 220 | Pleasanton, CA 94588 | 925.730.0150 PHONE | 925.730.0157 FAX

otherwise be landfilled. A sophisticated feedstock processing system will shred, screen, and sort the MSW producing a MSW-derived feedstock. The resulting products from the Feedstock Processing Facility include the MSW-derived feedstock and recoverable materials with market value (e.g. ferrous and nonferrous metals and high value plastics). The Biorefinery will have the capability to convert the MSW–derived feedstock into very low carbon diesel fuel, jet fuel, and bio-crude using a three-step process comprised of steam reformation, Fischer-Tropsch ("FT") synthesis, and hydroprocessing.

Fulcrum was successful in obtaining approval for a Prospective Pathway using the CA-GREET 1.8b model under the prior LCFS regulation. Specifically, Fulcrum obtained a pathway for Fischer-Tropsch ("FT") diesel via gasification and FT synthesis of MSW (Pathway Code: FTD 001). Subsequently, Fulcrum received notice that ARB was prepared to re-certify Fulcrum's pathway under CA-GREET 2.0 with a CI score of 14.78. Fulcrum accepted this re-certification.

Subsection 95488.9(f)

According to the Summary of Proposed Modifications, the intent of §95488.9(f) is as follows:

> *"Staff proposes to add a new subsection 95488.9(f) to clarify that, pursuant to Senate Bill 1383 (Lara, 2016), pathways utilizing biomethane from dairy and swine manure or organic material diverted from landfill disposal may be certified with a CI that reflects avoided methane emissions, until the State of California enacts a future regulatory requirement to reduce manure methane emissions from livestock and dairy projects, or a requirement to divert organic material from landfill disposal. After future regulatory requirements take effect, credits for avoided methane emissions under the LCFS would not be available for new projects. However, projects in place before such future requirements take effect would still be able to generate credits for avoided methane emissions for their current crediting period, which is ten years of operation."*[2]

The proposed subsection addresses two distinct categories of avoided methane emissions: 1) dairy and swine manure, and 2) organic material diverted from landfill disposal. Both of these categories are specifically referenced in the subsection's heading entitled, "*Carbon Intensities that Reflect Avoided Methane Emissions from Dairy and Swine Manure or Organic Waste Diverted from Landfill Disposal*." Within the subsection, §95488.9(f)(1) provides specific requirements that apply to dairy and swine manure; and

[2] See Notice of Public Availability of Modified Text and Availability of Additional Documents and Information dated April 20, 2018, Summary of Proposed Modifications at p. 18, available at https://www.arb.ca.gov/regact/2018/lcfs18/15daynotice.pdf

§95488.9(f)(2) provides specific requirements that apply to organics diverted from a landfill.

The final provision, §95488.9(f)(3) only references the dairy and swine manure category in its heading, "Carbon intensities that reflect avoided methane emissions from dairy and swine manure projects are subject to the following requirements for credit generation:" However, §95488.9(f)(3)(A) and §95488.9(f)(3)(B) specifically refer to "landfill-diversion pathways" and "diversion of organic materials from landfill disposal" respectively. Subsection §95488.9(f)(3) is of importance because it establishes crediting periods for projects that have received Executive Officer approval.

The intent language coupled with the language of §95488.9(f)(3)(A) and §95488.9(f)(3)(B) clearly establish that the subsection encompasses methane reductions from organics diverted from a landfill. Therefore, it is recommended that the heading of §95488.9(f)(3) be revised as follows: "Carbon intensities that reflect avoided methane emissions from dairy and swine manure projects and landfill-diversion projects are subject to the following requirements for credit generation:" (recommended additional language indicated by underline). This recommended language is intended to remove any ambiguity from the subsection.

Conclusion

Thank you for your consideration of our input. We would welcome the opportunity to provide any further information that would be value to ARB on this subject.

Sincerely,

Ted Kniesche
Vice President, Business Development
Fulcrum BioEnergy, Inc.