ECOENGINEERS
People Driven Solutions

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July 6, 2017

Cal/EPA Headquarters Building
1001 "I" Street
Sacramento, California 95814

RE: Comments Regarding Co-Processing of Biogenic Feedstock at Petroleum Refineries

To Whom It May Concern,

EcoEngineers would like to thank the California Air Resources Board (Referred to as CARB hereafter) for the opportunity to provide feedback on Low Carbon Fuel Standard (LCFS hereafter) workshop materials, specifically on Co-Processing of Biogenic Feedstock at Petroleum Refineries. We are excited to be a part of the process and have prepared the following comments for your consideration.

Background & Qualifications
EcoEngineers is an EPA approved Q-RIN Quality Assurance Program provider under the Renewable Fuel Standard program and conducts quarterly audits of over 40 domestic and international renewable fuel producers to ensure compliance under federal regulations. In California, we currently provide RIN QAP and LCFS services to several biofuel producers, along with compliance management services, pathway petitions, and other services to the biofuel industry.

EcoEngineers has extensive experience working with the California LCFS program and the CA GREET model. EcoEngineers has a full-time engineer dedicated to modeling fuel pathways in GREET and we have modeled more than 50 pathways using the CA-GREET model (1.8b & 2.0). We have submitted over 60 applications to CARB for registration under the LCFS. EcoEngineers has supported the efforts of biodiesel, renewable diesel, ethanol and biogas industries in California under the LCFS.

The following suggestions for co-processing pathways come from our auditing experience under the federal Renewable Fuel Standards (referred to as RFS hereafter) program, our experience with GREET modeling and pathway registration and verification under LCFS, and input we received from speaking with several renewable fuel producers.

<u>Co-processing in the LCFS</u>

1. **Reference:** Slide #10
   Questions:
   Are there issues/concerns with the quantification options presented here?
   Would stakeholders like to suggest alternate approaches?
   What data could be offered in support of selecting one or more methods of quantification?

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Comments:
Both quantification options are straightforward and acceptable. The mass balance method based on observed yields is more straightforward and easier to adopt in practice because it involves the measurement of fewer parameters than option 2.

2. **Reference:** Slide #10
   Questions:
   Is requiring three months of production data for each (with and without co-processing) in Option 1 for provisional pathways reasonable?

   Comments:
   Requiring three months of production data for each in option 1 for provisional pathways is reasonable.

3. **Reference:** Slide #10
   Questions:
   Is requiring three months of production data for co-processing in Option 2 for provisional pathways reasonable?

   Comments:
   Requiring three months of production data for co-processing in Option 2 for provisional pathways is reasonable.

4. **Reference:** Slide #20
   Questions:
   Are there issues/concerns with the GHG estimation framework presented here?

   Comments:
   The GHG estimation framework presented is reasonable.

5. **Reference:** Slide #20
   Questions:
   Would stakeholders like to suggest alternate approaches not considered here?
   What data could be offered in support of selecting one or more approaches for CI estimation?

   Comments:
   Ideally, producers using FCC process should be given the option to use either method (incremental and unit level allocation on energy basis) as both methods have their own merits.

6. **Reference:** Slide #24
   Questions:
   Are there issues/concerns with the supply chain material balancing approach described here?

   Comments:
   The supply chain material balancing approach described in the technical paper is reasonable, and is consistent with other pathways.

7. **Reference:** The draft hydrotreater GREET file was reviewed
   Comments:
   In the draft GREET file, the heating values of fuel gas used for the baseline and for co-processing are the same. However, it is likely that the fuel gas from oxygen-containing feedstock has a lower heating value than fuel gas from petroleum feedstock. This is because fuel gas produced from oxygen-containing feedstock contains CO_2 and CO, while fuel gas produced from petroleum feedstock contains little to no CO_2 or CO.

We would like to thank CARB again for the opportunity to provide comments; we look forward to working with staff to support their efforts to develop the quantification methodology for co-processing biogenic material and LCFS verification program. Please let us know if you have any questions about our comments.

Sincerely,

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