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Anil Prabhu
California Air Resources Board
1001 I Street
Sacramento, CA 95814
(Comment submitted via email to LCFSworkshop@arb.ca.gov)
aprabhu@arb.ca.gov

RE: Co-processing GHG Calculations

Dear Mr. Prabhu,

The following comments address the calculations and methods for co-processing in petroleum refineries [1]. It addresses the treatment of co-products and treatment of LPG and other co-products in the GREET model.

ARB has analyzed several methods for determining GHG emissions and yields. The following comments provide recommendations to the calculations for co-products.

- LPG vehicles currently consume several million gallons per year of LPG in California.
- Biofuel producers currently produce renewable LPG and the determination of the CI is comparable to that of renewable jet and renewable diesel.
- ARB should develop a temporary fuel pathway code for vegetable oil or other renewable feedstock based LPG.

Role of LPG

Several fuel producers currently co-produce LPG with renewable-feedstocks or are planning on starting facilities. The following technology options are among the many that co-produce renewable LPG.

- Hydroprocessing tallow and other fats to renewable diesel
- Hydroprocessing tallow and other fats with petroleum feed to renewable diesel
- Fluid catalytic cracking of pyrolysis oils to refinery feed

Since renewable LPG is produced from various fuel production processes, fuel producers should be able to generate LCFS credits from this fuel. The treatment of renewable LPG should be comparable to that of other fuels.

Treatment of Co-products

The GREET model and several fuel pathways approved by the ARB support the use of energy allocation for processes that produce multiple fuels. Several key principles surround these co-produced pathways.

1. Energy allocation is applied to fuel and energy products.
 - a. ARB's approved renewable diesel pathways allocate emissions to propane based on energy
 - b. GREET jet pathway allocates emissions to diesel and propane based on the energy production of jet, diesel, and propane.



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2. The WTT carbon intensity of all fuels is the same per lb of product when energy allocation is applied.
 - a. If renewable LPG is diverted from the fuel production process (for example hydrogen production) then the CI would change but for any given biorefinery configuration the emissions per lb of renewable LPG is the same as that of renewable jet, renewable naphtha, and renewable diesel with adjustments for transport. The CI varies with the heating value of the fuel.

The prior fuel pathways approved by ARB affirm these principles. Therefore, we recommend that LPG, jet fuel and naphtha receive the same calculation method for WTT values, with adjustment for transport and delivery.

WPGA greatly appreciates ARB's consideration to include renewable propane in the LCFS. We look forward to further participation in future workshops/discussions.

Warm regards,



Joy Alafia
President and CEO

[1] ARB Discussion Paper. Co-processing of Low Carbon Feedstocks in Petroleum Refineries. May 30, 2017, Staff Presentations June 2, 2017.