July 5, 2018

Mr. Sam Wade
Chief, Transportation Fuels Branch
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Submitted electronically to:
https://www.arb.ca.gov/lispub/comm/bcsubform.php?listname=lcfs18&comm_period=1

RE: Comments in Response to June 11, 2018 LCFS Workshop and Draft Regulation

Dear Mr. Wade,

The Western Propane Gas Association (WPGA) appreciates the opportunity to submit our comments in response to the draft regulatory amendment language to the Low Carbon Fuel Standard (LCFS). WPGA members provide propane fuel, products, and services to residents, businesses, and farms across California. Propane provides a low emission fuel option (including engine technology now certified to CARB's optional low-NOx standard) for many transportation applications in California, including school buses, airport shuttles, and public transit buses.[1]

WPGA strongly supports the inclusion of propane as a fuel under the LCFS. We appreciate that Staff has worked with us over the last several months to help ensure that propane receives fair and equitable treatment as it is added into the regulation. However, we have important concerns regarding CARB's characterization of key parameters affecting net credit generation in the early years of participation in the LCFS. Specifically, our concerns involve the draft regulatory amendment language related to 1) the carbon intensity ("CI") of fossil propane, and 2) treatment of the displaced transportation fuels for forklifts and buses.

Below, we present the key issues of concern, and then summarize with specific recommendations for Staff to modify the regulation language and/or functionality.

1. The Correct Baseline for Indoor Propane Forklifts Should be Gasoline SI Engines, not Diesel CI Engines

Summary of Specific Concerns

Under the LCFS, CARB assumes diesel-fueled compression ignition engines are the baseline for all off-road equipment. In reality, indoor forklifts (and many other small off-road applications) are dominated by spark-ignition engines, including those fueled by propane and gasoline. This is very important, given that spark-ignition propane and gasoline engines are at parity for their EERs. Since gasoline is already an established baseline fuel in the LCFS

[1] For example, San Diego MTC operates 77 propane-powered transit buses, class 4 through 6. CA School Districts rely on more than 1250 propane school buses, from small to full-size 72-passenger size.

(and propane is not), WPGA strongly believes that gasoline should be the baseline for indoor forklifts, and propane forklifts should therefore be assigned an EER of 1.0, instead of 0.9.

Below, we summarize WPGA's rationale and supporting evidence for this important point.

- Forklifts should be categorized as either primarily outdoor applications (railyard and shipyard applications) or primarily indoor applications (warehouse use). Specifically, we recommend delineating Class IV for indoor use, with gasoline serving as the baseline fuel instead of diesel. Most indoor-only applications are typically Class IV (cushion tire) lift trucks in the 3,000 to 7,000+ lbs. capacity range. This is due to the generally smaller sizes offered on a Class IV unit, and the fact that the indoor surfaces they're working on are wholly flat/smooth and pose no risk to the tire as they would on a Class V pneumatic tire lift truck.
- By comparison, diesel forklifts not used for indoor applications such as warehouses, owing primarily to the exhaust emissions of diesel engines (especially diesel particulate matter, a CARB-declared toxic air contaminant). In addition, diesel forklifts have higher sound levels and are generally designed for higher horsepower uses. These are all reasons why diesel forklifts are not used in primarily indoor applications and should therefore not be considered as the baseline for such applications.
- Many OEMs sell Class IV indoor lift trucks that operate on gasoline or propane (but not diesel); examples include the following:
    - Mitsubishi FGC15N-FGC33N lift trucks.
    - Caterpillar GC20-33NY and GC35-70K lift trucks.
    - UniCarriers Platinum II series lift trucks.
    - Clark Material Handling S20-32C, CGC 40-55, GEN 2 C20C-32C, GEN 2 C15C-20SC
    - Toyota Forklifts (FYI, the "Box Car Special" models are their most popular).
    - Crown C-5 cushion tire and C-G cushion tire lift trucks.
    - CombiLift C-Series

- We believe that CARB's 2014 ISOR for the LCFS program supports the conclusion that gasoline should be the baseline for smaller indoor-optimal forklifts. In the ISOR, which documented the initial inclusion of electric forklifts into the LCFS, [2] CARB refers to a 2003 study by EPRI. That EPRI report[3] notes that the analysis was conducted ***only*** on 4-wheel rider class forklifts (primarily Class I). Additionally, the ISOR references populations of Class I to III electric forklifts in its assessment. This strongly suggests that the basis of the analysis was for forklifts that are operated indoors, partially indoors, or are otherwise compelled to use low-emitting engines/technologies. In this case, it is reasonable to assume that spark-ignited engines are the true baseline, and propane forklifts using such engines should be assigned an EER of 1.0.
- Diesel forklifts -- particularly larger, rough-terrain forklifts (Class VII) -- will now be captured under the "Cargo Handling Equipment" (CHE) category, as described in the proposed 2018 modifications to the LCFS. These modifications establish an EER for electric CHE that is inclusive of heavy-lift diesel forklifts.[4] Because diesel

[2] See https://www.arb.ca.gov/regact/2015/lcfs2015/lcfs15isor.pdf, page III-9.
[3] See https://www.epri.com/#/pages/product/1002230/?lang=en.
[4] See https://www.arb.ca.gov/regact/2018/lcfs18/15dayattd.pdf.

forklifts are captured in the CHE category, the category called "forklifts" should refer to indoor, or indoor/outdoor operating forklifts with the assumption that the baseline is spark-ignited ICE technology.

Recommended Staff Actions

WPGA respectfully asks CARB to designate gasoline as the baseline fuel for all Class IV forklifts, which are designed primarily for indoor use, and assign propane-powered forklifts in this application with an EER of 1.0. (The same would apply to any other spark-ignited ICE technologies powering Class IV forklifts.)

2. Relative Roles of Natural Gas Processing and Petroleum Refining to Produce Transportation Propane Used in California.

Summary of Specific Concerns

Staff's proposed lookup table for "fuels that substitute for gasoline and diesel" assigns fossil propane a CI value of 83.65 gCO2e/MJ. This is based on an assumption specifying the fractions of California's transportation propane currently produced from petroleum refining versus that produced from natural gas processing. Based on previous Staff comments, it appears CARB assumes natural gas-derived propane constitutes only about 25 percent of this mix. As described below -- based on an analysis by ICF and an internal survey -- WPGA concludes that nearly double the percentage assumed by Staff is produced through the natural gas pathway, instead of the more-carbon-intense petroleum pathway. Clearly, Staff's existing assumption results in an overestimation for the CI of propane derived from petroleum. Updating the assumptions relating to propane feedstock fractions is critical to improving the accuracy of the CI assigned to fossil-based propane in California.

Corroborating Report from ICF

ICF, on behalf of WPGA, has just completed a draft report titled "Report on Propane Supply Sources for California." This report is being submitted confidentially to CARB. We have also summarized its key finding. As shown in the summary quote below, ICF estimates that the relative percentages for the average way that transportation propane is produced (for California vehicles) is **42 percent natural gas processing / 58 percent petroleum refining.**

"This report details ICF's assessment on the production source and type of production of the propane consumed within the state of California. The assessment is based on a combination of ICF's analysis of propane consumption levels, transportation options, and propane supply sources as well as publically available data sources that include the Energy Information Agency (EIA), the Canadian National Energy Board (NEB), and the U.S. International Trade Commission (ITC). This assessment evaluates supply, consumption, import, and export levels in 2016.

While data on propane supply and transportation is not definitive, based on the available data on propane production, imports, exports, and transportation, ***ICF estimates that in 2016, 42 percent (238 million gallons out of 568 million gallons) of the odorized propane consumed in California was sourced from natural gas processing plants****. Propane from natural gas plants is sourced in-state (26 percent), from Western Canada (72 percent) and from the U.S. Rocky Mountain region (2 percent).* ***The remaining 58***

percent of the propane consumed in California, or 330 million gallons, is sourced from propane produced by California refineries."[5]

Internal WPGA Survey

WPGA surveyed members to provide even greater detail regarding the percentage of propane derived from natural gas pathways versus petroleum pathways. A confidential member survey will be submitted to CARB that shows 45% of California's propane is derived from natural gas pathways and not the more carbon-intense petroleum pathway. California actually exports significant propane production volume to Mexico from Southern California petroleum-based refineries. One result of propane exports is that more fuel utilized in-State is derived from natural gas pathways.

Recommended Staff Actions

WPGA respectfully asks that Staff review the confidential ICF report and WPGA member survey, and incorporate this 45 percent / 55 percent split for the average way that California propane is produced. This will downwardly revise the baseline assumption of 83.65 gCO2e/MJ for the CI of fossil propane.

3. Propane On-road Trucks and Buses Primarily Displace Gasoline, Not Diesel

Summary of Specific Concerns

Propane vehicles in CA operate in several market niches in medium-duty applications. Airport shuttle bus, school bus, and transit bus fleet operators routinely choose not to purchase diesel vehicles, for a number of reasons. It is well known that 2010 on-road diesel tailpipe emission standards have resulted in greater diesel vehicle purchase and repair costs, and with reduced duty-cycle flexibility (particularly in stop-and-go settings and lower load or temperature profiles that can lead to DPF failure). Airport shuttles routinely operate in in highly competitive, contracted settings where higher diesel vehicle and repair costs are simply not tolerated. In addition, shuttles and buses routinely operate in areas sensitive to diesel exhaust exposure, including multi-level airport structures and with daily transporting school children between home, school, and offsite school events. Public transit operations have similarly rejected use of diesel vehicles, purchasing lower-emitting propane or other alternatively-fueled bus options[6].

Propane vehicles primarily compete in the Class 4-6 markets, where they displace gasoline fuel used in such vehicles. This is contrary to CARB LCFS staff's assumption that all heavy-duty (≥ 14,000 lb. GVWR) on-road vehicles in CA will operate as diesel vehicles. We invite Staff to review our previously submitted comments on the displacement of gasoline by propane vehicles, as well as the photos provided at the end of this letter.

Recommended Staff Actions

Because of the discrepancies in diesel, gasoline, and propane heavy-duty vehicle EER values proposed by CARB staff, we recommend CARB to add a Class 4-6 option for propane vehicles displacing gasoline, not diesel. We look forward to continuing our dialog on this matter per initial conversations with CARB staff in June, 2018.

[5] ICF, "Report on Propane Supply Sources for California," prepared for the Western Propane Gas Association, July 5, 2018.
[6] San Diego Metro Transit System operates 77 propane buses; according to MTS' Michael Wygant, diesel buses were simply not a viable option.

4. Summary of WPGA's Remarks and Requests for Modifications

In conclusion, the Western Propane Gas Association supports inclusion of propane in the LCFS, with critical updates to the propane carbon intensity value and baseline for indoor forklifts. We respectfully ask that Staff take the following actions, to make the regulation as accurate as possible with respect to how California's transportation propane is produced and utilized:

- Designate gasoline as the baseline fuel for all Class IV forklifts, which are designed primarily for indoor use, and assign propane-powered forklifts in this application (or any other spark-ignited ICE technologies) with an EER of 1.0.
- Review the ICF draft report and WPGA member survey (both sent confidentially to CARB) and incorporate a 45 percent / 55 percent split for the average way that California propane is produced.
- Add a Class 4-6 option for propane vehicles displacing gasoline, with an EER value of 1.0.

We look forward to continuing to work and dialogue with CARB staff in the coming weeks.

Sincerely,

/s/ Joy Alafia

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See photos below; many school buses operate on gasoline today and are candidates for replacement with low-emission propane school buses.


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