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California Independent Petroleum Association Comments on the February 22, 2023 – Informal LCFS Workshop

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Via electronic submittal to: regulatory docket

Thank you for the opportunity to share comments and key concerns related to the recent LCFS "Public Workshop: Potential Regulation Amendment Concepts" on behalf of the members of the California Independent Petroleum Association (CIPA)^{1,2}, and thank you for meeting with us on February 17, 2023, to discuss some of our concerns with the use of the OPGEE model alone for the LCFS calculations. We understand from our meeting that CARB wishes to use the best analytical framework available with which to estimate life-cycle emissions, but as we have consistently maintained in comments and workshops with you and with Stanford, OGPEE is missing key elements needed for a clear comparison between California-produced crude oils with other oils. As we have expressed, even if CARB proceeds on its current course, we request that at least CARB explicitly acknowledge that the tool has substantial uncertainties that are greater than the calculated differences in carbon intensity from different crude sources, and that the carbon intensity scores for crude produced in California are raw scores which do not account for compliance with any of CARB's existing regulations related to reducing greenhouse gas emissions. An appropriate location for such caveats would be on your LCFS Crude Oil Lifecycle Assessment webpage.

CIPA represents nearly 300 crude oil and natural gas producers, royalty owners, and service and supply companies who all operate in California. California produced crude oil is the only traditional fuel feedstock produced under California's Cap-and-Trade Program where the production emissions are *already accounted for and capped*. Imported crude is neither subject to the State's methane rules, nor to its price on carbon. California's requirement that California crude oil production be on a path to net zero GHG emissions is nowhere reflected in the OPGEE model results. By ignoring this fact, CARB is using a smaller set of factors to effectively shift emissions from California to other (higher-emitting) jurisdictions.

¹ The mission of CIPA is to promote greater understanding and awareness of the unique nature of California's oil and natural gas resources, and the independent producers who contribute actively to California's economy, employment and environmental protection.

² <u>https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/lcfs-meetings-and-workshops</u>

CIPA has supported its members in these GHG-reducing endeavors for years. We believe there should be an analysis that looks at the *global* impact of replacing California crude, with its detailed GHG emissions quantification and reporting, methane monitoring rules, flaring rules, vapor recovery rules and short pipeline transport distances with the equivalent volume of less regulated, long-distance transported foreign crude. As we have identified in prior comments and summarize here, OPGEE does not consider many of these factors. Furthermore, we have demonstrated that consideration of the actual regulatory environment under which California crude is produced has a large effect on the outcome of the analysis.

As CARB knows full well, California refineries are limited in the types of crudes they can accept, and that they are already optimized to process California crude. This is an additional externality that in part explains why, as California has increased its imports from foreign sources in the past five years, the increases are primarily from the heavy oil deposits in South America. CIPA has previously submitted comments to the OPGEE model update under earlier LCFS workshops. Those comment go into great detail about the need to get the science right BEFORE policy decision are made and describe a model in which the regulatory framework of California is ignored.^{3,4} It is worrisome that the opposite is being proposed, i.e., policy decisions preceding finalized updates to the foundational GHG model. We incorporate those comments by reference and provide these additional thoughts.

Comments Specific to the Workshop Materials

We have also reviewed the information provided through the Public Workshop. The workshop materials included slides⁵ and an updated LCFS regulation⁶, including a draft Table 9— Carbon Intensity Lookup Table for Crude Oil Production and Transport. We are disappointed to learn that the OPGEE model was completed and handed over to CARB many months ago, and that a revised proposed Table 9 was created without any industry input. CIPA has repeatedly engaged over the last two years and has, on various occasions, requested to work with staff on the conversion of the OPGEE model to Table 9 values. We would like to take this comment opportunity to again request an opportunity to sit across the table with CARB on this issue prior to Table 9 being finalized during this amendment process.

CIPA's key comments and concerns specific to the material provided at the Workshop are summarized here, and described in detail below:

- OPGEE scores for California produced crude are projected higher than CARB's last iteration of the LCFS regulations, even though CARB has claimed success for reducing industry emissions through other programs;
- Additional transparency is needed in OPGEE model citation and documentation from CARB;
 - Use of foreign default values, and
 - Lack of use of verified in-state data;
- We find staff's proposal to limit petroleum project crediting needs incredibly shortsighted considering that demand for crude in California has steadily increased since 2012.

³<u>https://www.arb.ca.gov/lists/com-attach/53-lcfs-wkshp-oct20-ws-WjldMgBxUmACWwVp.pdf</u>

⁴ <u>https://www.arb.ca.gov/lists/com-attach/4-opgee-general-ws-AGMBbgNyVmQAWVI9.pdf</u>

⁵ https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/lcfs_meetings/LCFSpresentation_02222023.pdf

⁶ https://ww2.arb.ca.gov/sites/default/files/2023-02/LCFSRegulatoryText_02222023_0.pdf

This proposal would not only reduce domestic producer's continued investments in lower the carbon intensities of their operations, it would further increase the state's reliance on foreign sources of oil.

CIPA has consistently worked to show, with data and analysis, that the OPGEE model on which the CI values in Table 9 are based clearly overestimates the CI of California crude oil, and underestimates the CI of foreign crudes, most notably those from Saudi Arabia and Ecuador, the two largest suppliers of oil to California. The main factors are as follows:

Issue 1: *OPGEE does not use current emissions data verified and reported to CARB by oil and gas producers.* These data are required by mandatory GHG emissions reporting requiring third-party verification, but OPGEE does not provide options for entry of these verified values. Instead, the OPGEE model relies on older OPGEE input data that does not reflect currently available CARB emissions data reported by oil and gas operators. By continuing to use the older data, OPGEE has in many cases overestimated the CI of California oil and gas up to a factor of 2 from actual CI levels. You have stated that these two models are "apples and oranges", but CIPA members have worked with Stanford to prove the concept that the MRR data can be used for the relevant OPGEE input parameters.

Issue 2: *OPGEE underrepresents greenhouse gas emissions from foreign oil fields such as those in Saudi Arabia and Ecuador.* Data entry and built-in constants rely heavily on public datasets, yet these datasets have lower confidence than data California operators are required to report and submit to CARB. In particular, the public data retrieved from the major countries (Saudi Arabia and Ecuador) supplying crude oil to California do not include the same level of details as the California datasets, specifically with respect to flaring which is virtually unreported for both Ecuador and Saudi Arabia. Moreover, most datasets related to foreign oil sources that satisfy OPGEE entries are not publicly disclosed information due to proprietary reasons, which calls into question how well OPGEE accurately calculates the CIs reported for oil fields in the LCFS regulation. This fact is acknowledged by the creators of the model themselves, who run Monte Carlo analyses to determine the 95% confidence intervals for the model output in their study published in 2018. For example, the results of their analysis indicated that while the OPGEE output for crude oil production (not including transportation) in Ecuador was a carbon intensity of approximately 10, the confidence interval ranged from 8 (5th percentile) to 20 (95th percentile).⁷

As we discussed during our meeting on February 17, CARB inputs for most foreign sources of oil are based on default values published in scientific literature which are focused on North American fields. The only site specific information for each field entered into the OPGEE model is field age, depth, and production volumes. Because CARB has no data from the fields themselves, the OPGEE model is set to assume that all natural gas produced at fields in Ecuador is reinjected, not flared or vented. The OPGEE user manual describes these limitations, although buried on page 361 of 395. For example, "the water-oil ratio (WOR) is a major parameter in influencing GHG emissions. OPGEE includes a statistical relationship for water production as a function of reservoir age. The default exponential relationship is a moderate case parameterized with a variety of industry data. Nevertheless, this relationship does not work well in predicting WOR for giant fields with very high per well productivity (e.g., Ghawar in Saudi Arabia)."

⁷ Masnadi, M. et al. 2018. *Global carbon intensity of crude oil production*. Science. Volume 36, Issue 6405, pg 851-853.

Similarly, CARB does not have production data by field for Saudi Arabia or Ecuador, but instead inserted the Country average barrel of oil per day per well value (which is estimated from the 2015 Oil and Gas Journal Worldwide Production Survey that provides data through 2013) and assumes 10 wells per field. Point in fact, the only change in input values between OPGEE2 and OPGEE3 is the addition of four years to the age of each field. Just that change alone resulted in an increase of CI by 25% for Ecuador and 30% for Saudi Arabia. This is the case for most of the foreign fields calculated in OPGEE, but the resulting calculated and estimated carbon intensity scores are reported as fact without any such caveats in Table 9 of the LCFS regulation.

On our call on February 17, CARB staff stated that it was important that a full-cycle analysis of crude feedstocks be reflected in the OPGEE model, including land use practices. However, nowhere is the clear cutting practices of the Amazon Rain Forest in South America by California's leading sources of imported crude accounted for.

Notably, while the production volumes and number of wells for most foreign fields are estimated based ten-year old data and were unchanged between OPGEE2 and OPGEE3, the California production and well data has been updated with 2019 values. Thus, the model likely overestimates production volumes, and underestimates the number of wells everywhere but in California. The compounding of these errors leads to spurious results that hinder fact-based decision-making (for example, significantly undercounting the CI of crude oil delivered to California from Saudi Arabia⁸ and Ecuador⁹, and elsewhere). The Oil and Gas Journal has available for purchase both a 2023 Worldwide Production Survey report that provides 2022 production volumes by field that CARB should use to more appropriately estimate carbon intensity of foreign oil.

Issue 3: The 63 OPGEE default values have the potential to underrepresent the greenhouse gas emissions from marine tanker ships. OPGEE includes default parameters where data are unavailable and default settings for process sensitivity when considering applicable characteristics. For instance, while the model input was updated in this version to calculate the actual distance traveled to California (round trip), the model does not account for emissions while tankers idle in queues at ports in California. Increased foreign supplies will increase these significant impacts to California coastal port cities.

Issue 4: OPGEE does not account for greenhouse gas reduction measures required in California oil fields, such as the requirement for offsets set forth in the AB-32 cap and trade system, and efforts by producers to use novel approaches such as meeting field energy needs through solar power. California producers also abide by strict local air district rules and a statewide Methane Rule, all of which have significant GHG mitigation effects. For example, all producers who emit over 25,000 MT of CO₂e within an air basin are required to participate in CARB's Cap-and-Trade program, to offset their GHG emissions. This means that most of the enhanced oil recovery in the State is covered by this program. CARB could readily include a weighted adjustment in the final CI scores of California oil fields, in a manner similar to how CARB incorporated a reduction for LDAR to the CI scores and a separate calculation of CI for fields that use Chevron steam. Note also that it is impossible to determine how CARB incorporated

⁸ According to the International Energy Agency, Saudi Arabia has no leak detection and repair policies, no restrictions to venting and flaring, and no methane or GHG measurement requirements: https://www.iea.org/reports/driving-down-methane-leaks-from-the-oil-and-gas-industry

⁹ Ecuador produces two grades of oil, one a heavy oil with high energy requirements for extraction: see

https://www.eia.gov/international/content/analysis/countries_long/Ecuador/Ecuador.pdf. In addition, the infrastructure in Ecuador is dated, poorly to unmonitored, and OPGEE likely underestimates this source: see https://carleton.ca/engineering-design/story/flaring-in-the-amazon/

tank controls into the secondary inputs of the model in order to affect the carbon intensity score of California fields. There should be clear transparency indicating how compliance with CARB regulations reduced greenhouse gas emissions and carbon intensity of production in California. These are California initiatives that foreign suppliers are not participating in and which should be considered when calculating the CI of California oil fields.

Taken together, these issues result in the OPGEE model significantly misrepresenting California emissions with respect to low confidence estimates generated by default values derived from North American fields for imported foreign crudes. The numbers are striking:

- Issue 1 (use CARB-required verified GHG emissions data) could cut California crudes CI in half;
- Issue 2 (include marine tanker idling emissions and impacts to California ports and stop assuming oil produced in Ecuador and Saudi Arabia has lower CI than California simply because there is little to no supporting data available) could have a substantial shift in the relative CI of foreign versus California crude oil;
- Issue 3 (stop using incorrect default values) could cut California's CI relative to Ecuador and Saudi Arabia by another factor of 2; and
- Issue 4 (apply GHG reduction successes in California oil fields to their CI) would have a substantial and ongoing reduction in the CI of California crude oil.

The data support the common-sense conclusion that California's demand for oil is best met by locally produced, locally regulated, and lesser greenhouse gas emitting oil than those foreign sources which require long transport distances in addition to non- or under-reported greenhouse gas emissions and environmental protections. By failing to include consideration of these factors, OPGEE has a significant uncertainty in model outputs, larger than the results themselves. If **CARB wishes to use OPGEE and the results as currently configured, then CARB should be more transparent regarding the uncertainty of the results of this tool, by presenting confidence intervals for each of the scores and clearly listing assumptions and data gaps in its inputs to this tool on its website where the tool is made available for public review, and in the publication of California's carbon intensity score published each year.**

Innovative Crude Credit Limits

In addition to the presentation of carbon intensity, the workshop staff presentation laid out potential changes to the LCFS program that would limit and ultimately phase out credit generation for petroleum projects. CIPA is opposed to policy shifts which discourage in-state carbon reduction investments. As long as there is demand for liquid fuels, California should be promoting GHG reduction projects for in-state oil and gas extraction given it is the only crude oil that is compliant with California's climate program.

CIPA members are actively deploying various carbon reduction strategies including renewable energy to replace both electricity <u>and</u> thermal loads, in addition to carbon capture and sequestration, which is rightly not subject to potential limitation. Replacing thermal loads has direct local air quality benefits in the state's most impacted communities.

<u>Summary</u>

California will need petroleum and natural gas fuels for many years. During this time, California should not only prioritize in-state supply but incent its carbon intensity reduction—staff's

proposal is just the opposite. Any regulatory proposals that run counter to the ultimate goal of reducing GHG emissions worldwide should be discarded.

In addition, CIPA strongly opposes any LCFS amendments in which in-state crude, produced under the strictest environmental standards in the world, is replaced with imported crude either by direct regulation or indirect impact such as inaccurate values for crude carbon intensity scores. A successful LCFS would not shift emissions, tax-base and jobs to other countries, when California crude oil is on a State and local -mandated path to net zero GHG emissions unlike any other crude oil source to California.

The last barrel of oil used in California, should be produced in-state with all the local, regional and statewide environmental, health and safety and labor standards ensured to be used. California environmental and worker leadership cannot include looking the other way through direct or indirect promotion of foreign crude supplies.

Thank you for continuing the dialogue with us. We look forward to working with CARB on this important topic.

Sincerely

Rock Zierman Chief Executive Officer California Independent Petroleum Association