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Dr. Steven S. Cliff,
Executive Officer, California Air Resources Board
1001 I Street, Sacramento, CA 95814

Submitted electronically via https://ww2.arb.ca.gov/lispub/comm/bclist.php

Re: Comments regarding proposed Amendments to the Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms

Dear Dr. Cliff,

Phillips 66 Company (Phillips 66) appreciates the opportunity to comment on the proposed Amendments to the Regulation for the California Cap on Greenhouse Gas (GHG) Emissions and Market-Based Compliance Mechanisms. Phillips 66 has major operations in California to produce and market liquid transportation fuels and is an obligated entity under the Mandatory Reporting Regulation (MRR) and the Cap-and-Invest (C&I) regulation. In 2024, Phillips 66 ceased crude oil processing at our San Francisco Refinery facility and completed its transition to Rodeo Renewable Energy Complex (RREC). This conversion enabled a new lower carbon operation to produce renewable diesel (RD), renewable naphtha (RN), and alternative jet fuel (AJF) that can be blended with conventional jet fuel to produce sustainable aviation fuel (SAF). Due to this transition, RREC has reduced its carbon footprint by over 50%, thus significantly contributing to California's statewide GHG reduction targets. RREC's production of SAF would be consistent with state policies to decarbonize the aviation sector[1] and aligns with CARB's goal to *ensure at least 200 million gallons of cost-competitive and commercially viable sustainable aviation fuel is available for use by operators in California by 2035*[2]. In addition to operating RREC, Phillips 66 is also a marketer of transportation fuels and other products in California.

[1] 2022 Scoping Plan Update
[2] CARB and nation's leading airlines announce landmark partnership for a sustainable aviation future | California Air Resources Board

Phillips 66 considers C&I as a key market-based approach to help California achieve GHG reduction goals. CARB's focus on C&I program stability, allowance cost containment and allocation to Energy-Intensive, Trade-Exposed (EITE) facilities during previous rulemaking has been crucial in ensuring compliance certainty for regulated entities. Phillips 66 appreciates and thanks CARB for similar focus in the proposed amendments to C&I and MRR regulations. As these proposed amendments will directly impact Phillips 66's operations at RREC, we submit the following comments in support of California's SAF production goals.

Summary of Phillips 66's Key Recommendations and Requests

- Phillips 66 is supportive of proposed amendments to allocate allowances to biorefineries including SAF production facilities using the Liquid Hydrocarbon Fuel (LHF) framework.
- Phillips 66 is recommending CARB conduct a data-driven review of the benchmark for "On-purpose Hydrogen Gas Production" for SAF production facilities and create a separate benchmark for these hydrogen plants aligned with actual operational emission intensity.
- To support the nascent stage of in-state SAF production and the need for its continued ramp-up, Phillips 66 recommends CARB adopt a more gradual Cap Adjustment Factor (CAF) reduction trajectory for SAF production facilities – one that holds at 0.494 in 2031 and declines steadily to 0.279 in 2035, avoiding a steep single-year drop.
- We appreciate CARB's intent to drive manufacturing decarbonization through a new and innovative incentive but recommend expanding the eligibility to SAF production facilities by adding an exemption for NAICS code 325199. This would support the in-state investments needed to enable the ramp up of SAF production aligned with existing state policies.
- Phillips 66 supports amendments proposed in the C&I regulation §95852.2 (a) (8) and (9) that allow exemption of CO_2 emissions from *biomass-derived motor gasoline blendstocks* and *biogenic fraction of fuel that is a co-product of the production of an exempt biomass-derived liquid hydrocarbon fuel*.

Detailed comments

1. **C&I allowances allocation for SAF production facilities**

One of the most impactful provisions in the proposed C&I amendments for Phillips 66's operations in California is direct allocation of California GHG allowances for transition assistance and leakage minimization (§95890 and §95891). Phillips 66 provides the following comments with respect to the allocation benchmarks, benchmark units, cap adjustment factor, and the assistance factor.

a. Benchmarks and Benchmark Units

CARB has proposed a new benchmark unit of Liquid Hydrocarbon Fuel (LHF) for allowance allocation to petroleum and biorefineries. CARB has also proposed a new, single benchmark of 0.0319 allowances/barrel of LHF produced for all refineries, including RREC, to use in calculation of allowance allocation. Phillips 66 supports the definition of LHF and use of LHF benchmark unit for biorefineries including SAF production facilities. We also appreciate flexibility provided by CARB to employ this benchmark beginning with the 2026 Reporting Year.

Another benchmark relevant to SAF production facilities is for On-purpose Hydrogen Gas Production. In Table 9-1 of the C&I regulation, this benchmark is categorized under NAICS code of 325120 (Industrial Gas Manufacturing). The benchmark is set at 8.94 allowances/metric ton of on-purpose hydrogen gas produced under the current regulation and has not been updated as part of proposed amendments. In earlier C&I rulemakings[3], this benchmark was set using "Carbon Dioxide Weighted Tonne" framework for hydrogen production and the benchmark has been updated in other past rulemakings to ensure equity between merchant hydrogen plants and refinery-owned hydrogen production. Phillips 66 believes that the current proposal is missing an opportunity to update this benchmark for SAF production facilities as it appears to not consider high hydrogen requirement per barrel of SAF/RD production vs. gasoline or ultra-low sulfur diesel (ULSD) production. We are providing some technical points below for CARB to consider as part of this rulemaking and request a revised, higher benchmark that will differentiate the emission-intensive on-purpose hydrogen gas production for SAF facilities.

Renewable feedstocks typically contain 10 weight percent oxygen that needs to be removed via hydroprocessing. In contrast, petroleum gas oils used to produce ULSD lack oxygen and contain a maximum of 2-3 weight percent sulfur. Due to the higher degree of hydrotreating required for renewable feedstocks, the amount of hydrogen required for renewable processing is higher on a per barrel basis than petroleum processing. Hydrogen required for gasoline and ULSD production and provided by steam methane reformer (SMR) units ranges from ~250 to 1000 scf/bbl of product[4]. In contrast, hydrogen required for SAF/RD production and provided by SMRs is ~2000-2500 scf/bbl product[5] - almost 2-3 times that of petroleum processing.

As mentioned earlier, the current hydrogen benchmark was set during the 2010 C&I rulemaking using "Carbon dioxide weighted Tonne" framework based on then-existing hydrogen production data as reported in the MRR regulation. However, a typical petroleum refinery produces hydrogen in SMR using natural gas as feed and fuel for heat. In contrast, SAF production facilities can use refinery fuel gas as feed and/or fuel for SMRs in addition to natural gas to maximize plant efficiency. In this case, emission intensity for hydrogen production (CO_2 emissions per ton of produced hydrogen) increases significantly, in some cases by as much as 10%, as the fuel gas in SAF production facilities contains heavier molecules than natural gas.

Based on this information, it appears the benchmark of 8.94 allowances/metric ton of on-purpose hydrogen produced does not consider increased emission intensity for SAF production facilities as the benchmark was set long before the emergence of biorefining operations in California. As per Appendix E, Section I (B) of the proposed regulatory amendments[6], CARB's intent is to provide equitable treatment for fossil and non-fossil transportation fuel producers, which is appropriate. However, assigning only one benchmark for hydrogen production for both SAF production facilities and petroleum refineries, based on historic petroleum-only refining operations, is overlooking important distinctions unique to hydrogen production and use by SAF production facilities. It is also ignoring benchmark changes needed to accurately reflect emission intensity of related on-purpose hydrogen production. This omission will certainly disadvantage facilities like RREC vs. traditional petroleum refineries and result in a lower allocation for hydrogen production as it relates to hydrogen consumption per LHF barrel.

[3] CARB Document: https://www.arb.ca.gov/regact/2010/capandtrade10/suppfsor.pdf
[4] Modelling of H2 consumption and process optimization for hydrotreating of light gas oils - Pinos - 2019 - The Canadian Journal of Chemical Engineering - Wiley Online Library
[5] Life Cycle Greenhouse Gas Emissions of Biodiesel and Renewable Diesel Production in the United States
[6] Additions and Amendments to Product-Based Benchmarks in the Cap-and-Invest Regulation

To avoid this inequity, Phillips 66 is recommending CARB conduct a data-driven review of the benchmark for on-purpose hydrogen gas production for SAF production facilities and create a separate benchmark for these facilities. CARB should be able to achieve this by reviewing existing MRR and EPA Part 98 data reported by biorefineries after 2021 and by creating a new benchmark for "On-purpose Hydrogen Gas Production for biorefineries" under the NAICS code 325120.

b. Cap Adjustment Factor (CAF)

Phillips 66 supports CARB's proposal to keep CAFs unchanged for budget years 2027 to 2031, which will provide much needed clarity for EITEs with respect to expected allowance allocation. However, the precipitous drop in CAF from 0.494 in 2031 to 0.348 in 2032 will create a significant near-term compliance cost burden for in-state EITEs, and especially for SAF production facilities, originating from a combination of higher priced allowances that are in lower supply and a lower CAF.

As per the data shared by CARB staff during the October 2025 workshop[7], the ratio of industrial allocation to industrial covered emissions is the lowest for California EITEs vs. EITEs in other jurisdictions, as shown in Figure 1, indicating existing compliance cost burden. Over the last few years, through a combination of plant conversion, fuel switching, implementing energy efficiency projects, and idling operations, EITEs have lowered covered emissions. However, with the proposed changes in CAF in 2032, this burden is expected to escalate, disadvantaging California EITEs. For comparison, this ratio will be 93% in 2032 for Washington EITEs.

Jurisdiction	2023 Industrial Covered Emissions	2023 Free Industrial Allowance Allocation	Ratio of Industrial Allocation to Industrial Covered Emissions (%)
California	54,876,876	32,921,049	60%
Washington	9,182,283	9,162,037	~100%
Québec	19,734,923	19,543,087	99%
European Union	628,571,429	528,000,000	84%
United Kingdom	50,900,178	36,856,294	72%

Figure 1. Comparison of industrial allocation under different jurisdictions as presented by CARB staff during C&I workshop conducted on October 29, 2025.

To ensure SAF production continues to thrive in California, Phillips 66 is urging CARB to adopt a gradual decline in CAF trajectory for SAF production facilities that start at 0.494 in 2031 and ends at 0.279 in 2035 but does not contain a precipitous drop during intermediate years. We are proposing an option for revised CAF in Table 1 obtained by adopting a straight-line decline between 2031 and 2035 CAF values that results in CAF decline rate of

[7] Cap-and-Invest Workshop October 2025

~10.9% per year. This will provide a necessary planning horizon and not undermine California's interest in ramping up the production and use of SAF.

Table 1. Recommended Revised CAFs for SAF Production Facilities

Budget year	Proposed CAF for standard activities	Recommended CAF for standard activities
2031	0.494	0.494
2032	0.348	0.440
2033	0.324	0.386
2034	0.301	0.332
2035	0.279	0.279

c. Assistance factor (AF) and leakage risk classification

Phillips 66 appreciates CARB's proposal to set the assistance factor at 100% through 2035 for all EITEs irrespective of the leakage risk classification (High, Medium, Low).

At present, leakage risk classification is "Medium" for SAF production facilities (NAICS code 325199). Phillips 66 is urging CARB to reclassify biorefineries, and especially SAF production facilities, in the "High" risk classification category because biofuels are part of an international market with California importing substantial volumes each year. RREC has always been an "Energy-Intensive" facility, but now it is more "Trade-Exposed" than when it was a traditional crude oil refinery. To protect a nascent SAF industry and allow it to expand, we are recommending CARB classify SAF production facilities under "High" leakage risk category.

d. EITE electricity allocation

As indicated in our previous comment letter submitted in response to the Joint California-Québec C&I amendments Workshop conducted on June 14, 2023[8], Phillips 66 is supportive of CARB directly allocating allowances to EITE industrial facilities to address carbon costs associated with purchased electricity.

2. Manufacturing Decarbonization Incentive Allocation

In §95891(g), CARB has proposed a novel and noteworthy concept for a CAF modifier for eligible facilities as a manufacturing decarbonization incentive that will be in effect from budget year 2027 through budget year 2038. We believe one or more decarbonization activities listed in this section have potential to significantly reduce GHG emissions from EITE facilities like RREC over the next 12 years. By providing this incentive for 12 years, CARB is

[8] Joint California-Québec Public Workshop: Potential Amendments to the Cap-and-Trade Regulation: June 14, 2023: Submission #133 | California Air Resources Board

providing a strong signal to EITE facilities to implement decarbonization projects that are technically feasible but may not be economically attractive under current market conditions.

As per the ISOR, the intent behind this incentive is *to align with the requirements of AB 1207 direction that the C&I minimize emissions leakage risk and support the state's climate targets*. Returning allowance value to facilities to directly reduce on-site GHG emissions has been an industry priority since the Program's inception. These potential decarbonization projects can contribute to significant in-state investments that support statewide GHG emission reductions. However, as currently proposed, SAF production facilities appear to be excluded from eligibility – an outcome that is perplexing and inconsistent with the state's broader policy goals for SAF. If the goal is to incent facilities to implement decarbonization technologies by making up for lost federal funding opportunities, such as those under the Inflation Reduction Act, and to achieve additional 'hard-to-decarbonize' GHG reduction, then the eligibility should be expanded, even if there are Low Carbon Fuel Standard (LCFS) benefits that also accrue[9]. The C&I program is focused on stationary emissions, whereas the LCFS is focused on life cycle emissions, therefore they are complementary and shouldn't be treated as mutually exclusive.

In summary, Phillips 66 appreciates CARB's intent to drive manufacturing decarbonization through a new and innovative incentive but recommends expanding the eligibility of the incentive to SAF production facilities by adding an exemption for NAICS code 325199 as it can further catalyze in-state investments needed to support ramp-up of SAF production aligned with existing state policies.

3. **Biogenic CO2 exemptions for renewable fuels**

Phillips 66 supports amendments proposed in the C&I regulation §95852.2 (a) (8) and (9) that allow exemption of CO_2 emissions from biomass-derived motor gasoline blendstocks (e.g., renewable naphtha) and biogenic fraction of fuel that is a co-product of the production of an exempt biomass-derived liquid hydrocarbon fuel (e.g., renewable fuel gas).

Concluding Remarks

Phillips 66 thanks CARB for this opportunity to submit comments in response to proposed amendments to C&I and MRR regulations. Phillips 66 is supportive of proposed amendments to allocate allowances to SAF production facilities using LHF framework but recommends CARB set a new benchmark for on-purpose hydrogen production for SAF production facilities to reflect their current emission intensity. Phillips 66 recommends CARB classify SAF production facilities under "High" leakage risk category and adopt a more gradual CAF reduction trajectory for these facilities given their alignment with California policies and their nascent state as they continue to ramp-up SAF production. In addition, we also recommend making SAF production facilities eligible to apply for the manufacturing decarbonization incentive. Finally, Phillips 66 supports CARB's proposal to exempt CO_2 emissions from biomass-derived motor gasoline blendstocks and biogenic fraction of fuel that is a co-product of the production of an exempt biomass-derived liquid hydrocarbon fuel. Taken together, these recommendations will

[9] Staff Report: Initial Statement of Reasons

ensure that California's Cap-and-Invest regulation supports — rather than penalizes — the state's nascent SAF industry, which is essential to meeting California's aviation decarbonization goals.

If there are any questions, please contact me at sourabh.s.pansare@p66.com.

Sincerely,

Sourabh Pansare