



October 26, 2023

Dr. Liane Randolph
Chair, California Air Resource Board
1001 I Street
Sacramento, CA 95814

RE: Comments on October 5 CARB workshop regarding updates to California's Cap-and-Trade Program

Dear Chair Randolph,

On behalf of Environmental Defense Fund (EDF), we appreciate the opportunity to provide comments on the October 5, 2023 workshop on updates to the California Cap-and-Trade Program. As always, EDF appreciates CARB's diligent work on this program, and we look forward to ongoing engagement through this process. These comments respond to several of the proposals put forward in this third workshop, as well as considerations we recommend CARB take up at future workshops.

To avoid the worst impacts of climate change, we need to secure as many emissions reductions as possible in this decade to stay within the carbon dioxide budgets identified by the Intergovernmental Panel on Climate Change (IPCC) to keep global warming within the 1.5C target. EDF commends CARB for its emphasis on near-term and ambitious actions to maximize emissions reduction by 2030, and specifically focusing on the cumulative climate benefits of near-term reductions.

CARB must ensure that the emissions cap be calibrated to achieve *at least* a 48% reduction below 1990 emissions by 2030, which was determined by the 2022 Scoping Plan to be necessary to get on-track to achieving net-zero by 2045. When considering adjustments to allowance budgets to align with this target, EDF suggests CARB prioritize maximizing emission reductions in the near term. EDF also recommends that as CARB looks beyond 2030, the allowance budget should be based on the 2030 budget rather than on the emissions target.

This workshop also discussed updating the biogenic CO₂ exemption to provide equal treatment to production and combustion emissions. To fulfill AB32 mandates and Scoping Plan directives consistently with the Paris Agreement, CARB must – and readily can – remove the “zero rating” and amend the Cap-and-Trade Program's treatment of biogenic emissions with emphasis on accounting for the full lifecycle impacts of bioenergy production and use. To streamline implementation of clear evaluation, accounting and reporting methods for biomass and biomass-derived fuels, CARB

can look to precedents such as the lifecycle carbon intensity analyses used in the Low Carbon Fuel Standard (LCFS).

Emissions cap must be aligned with the Scoping Plan's 2030 emission reduction goal.

EDF appreciates CARB's consideration of multiple allowance budget scenarios, including achieving an 85% reduction in emissions below 1990 levels by 2045. This foresight to 2045 is critical to California's long-term success in reducing emissions. Even as we work to maximize near-term emission reductions, it's imperative to give clear direction about the future trajectory of the cap-and-trade program to allow for long-term planning for new investments in emission reduction strategies and technology.

Given the urgency of near-term reductions and the necessary emissions trajectory to achieve the goals of the 2022 Scoping Plan, **EDF urges CARB to move forward in the formal rulemaking with a cap adjustment to achieve *at least* at 48% reduction in emissions by 2030.** To most effectively minimize damage from climate change, California needs to cut climate pollution rapidly, *in this decade*. Earlier reductions in emissions translate to greater cumulative reductions, which makes it easier to ensure that California is on a reduction trajectory in line with what climate science requires.

The cap-and-trade program is crucial to ensuring that California meets its emissions targets by ensuring that emissions don't surpass set limits. The primary feature of the program – the cap – sets an emissions budget for covered sources, acting as a safeguard if other strategies and policies fall short. The 2022 Scoping Plan emphasized this program as a key tool to bridge the gap between expected reductions from other policies, and the necessary cuts to achieve California's goals. The role of cap-and-trade isn't just as a driver for reductions, but as an 'insurance policy' to ensure consistent emission declines. With uncertainty around the timely scale and deployment of nascent technologies like green hydrogen and carbon capture by 2030, a firm and properly calibrated emissions cap is essential. California's commitment to tightening its allowance budget is a significant advancement in climate ambition, and setting a more ambitious cap will accelerate near-term emission reductions in addition to facilitating the achievement of the state's long-term emission targets.

CARB should set the emissions cap to function effectively as the "backstop" to ensure California meets its climate goals.

To function effectively as the backstop, the emissions budget must be calibrated to ensure that cumulative emissions in California, at a minimum, do not exceed emissions allowed under a declining trajectory from 2020 to 2030 targets, factoring in any previously "banked" allowances that may be retired for compliance in the upcoming years. As previously stated, this backstop should be calibrated to achieve at least 48% reduction in emissions by 2030.

As CARB considers adjustments to the 2025-2030 allowance budgets, EDF recommends consideration of the market impact of banked allowances, which CARB has previously estimated as representing 5% of all allowances. Specifically, EDF recommends that at least some of that amount be reflected in the reduction of future allowance budgets. Similarly, CARB should consider emissions from sources not covered by the program cap; at present, CARB's approach plans for capped emissions to be reduced 85% by 2045, thus presumably relying on uncapped sources to also achieve an 85% reduction by 2045 for the state as a whole to meet its reduction goals. This assumption presents a great deal of uncertainty which should be accounted for in CARB's modeling. For a longer discussion of these and other considerations, such as the impact of emission reductions

achieved during the Covid-19 pandemic, please refer to our comments on CARB's July 27 workshop.¹

A downward cap adjustment should maximize near-term emission reductions.

As CARB considers modifications to allowance budgets to achieve the greater near-term ambition called for in the 2022 Scoping Plan update, EDF recommends that CARB prioritize decreases in the allowance budget that will maximize emission reductions before 2030. This means **most if not all allowances should be removed from those that would be directly allocated and offered at auction** – as opposed to removing allowances from the APCR or the price ceiling.

To the extent that CARB must deviate from this recommendation, allowances should be retired *only* from the Allowance Price Containment Reserve (APCR) exclusively for the protection of low-income ratepayers. EDF recommends CARB publish the modeling results of the various scenario options as soon as possible so the emission benefits of removing allowances from the different categories can be assessed. CARB should also consider independent modeling of the program, including forthcoming analysis from Resources for the Future. Drawing allowances from the APCR, or from the price ceiling, would not be effective ways to achieve the goal of this program adjustment and would risk disincentivizing near-term reductions. Removing allowances from the APCR should only be considered for the purpose of targeted ratepayer protections.

Furthermore, as CARB staff pointed out in the October 5 workshop, maintaining the allowances in price containment reserves is also important for protection against rapid price increases. If CARB were to reduce the number of allowances in the APCR, that would risk undermining a critical cost-containment function of this program by reducing its ability to actually protect against such price increases. CARB should avoid weakening this important mechanism and prioritize any budget reductions on the allowances that are auctioned or directly allocated. This is the strongest strategy to guarantee that this increase in program ambition actually translates to tangible and immediate emission reductions.

Post-2030 allowance budgets should leverage the opportunity for increased ambition.

In the October 5 workshop, CARB presented two pathways for allowance budget-setting beyond 2030: an 'emissions target method' and an 'allowance budget method.' Both methodologies offer strategies to determine how many new allowances would be issued in the program between 2031 and 2045, with the emissions cap declining towards a level in 2045 that equals an 85% reduction below 1990 levels for covered sources. However, these methodologies differ in the starting point from which the cap declines towards the 2045 target level – determining the pace and scale at which the actual emissions cap declines over time, and thus the cumulative reductions achieved by the program. Option 1, the emissions target method, would issue allowances over this period based on a declining pathway from the annual emissions level equivalent to the 2030 goal, though reflecting the cap adjustment based on the updated emissions inventory.² Option 2, the allowance budget method, would issue allowances between 2031 and 2045 based on a declining pathway from the number of allowances that are issued in the 2030 -- which, in turn, would be set to achieve cumulative reductions over the decade in line with the 2030 goal.³

¹ <https://ww2.arb.ca.gov/form/public-comments/submissions/5226>

² CARB October 5 Cap-and-Trade Program Workshop, slide 31
(https://ww2.arb.ca.gov/sites/default/files/2023-10/nc-CapTradeWorkshop_Oct052023_0.pdf)

³ CARB October 5 Cap-and-Trade Program Workshop, slide 32
(https://ww2.arb.ca.gov/sites/default/files/2023-10/nc-CapTradeWorkshop_Oct052023_0.pdf)

Although both pathways would aim for the same end point – an 85% reduction in gross emissions by 2045 – the path California takes towards that end goal will determine how effectively the state curbs climate impacts. This is because minimizing cumulative emissions of long-lived greenhouse gas pollutants is crucial to avoiding the worst impacts of climate change. While both methods outlined by CARB would arrive at the same “end point” for allowances issued in 2045, the starting point from which the cap declines will affect the cumulative allowance budget – and thus the level of cumulative reductions secured by the program. CARB’s October 5th presentation outlined how an emissions cap aligned with the Scoping Plan’s 48% by 2030 target would set a post-2030 emissions cap at approximately 173 MT under the ‘emissions target’ method, compared to 139 MT under the ‘allowance budget’ method. This change in baseline has significant implications for the amount of cumulative climate pollution emitted post-2030.

Based on the preliminary options offered by CARB, **EDF recommends that CARB pursue the methodology outlined in Option 2 – the allowance budget method.** The ‘allowance budget method’ would allow CARB to pursue a more ambitious emission reduction pathway on the way to achieving California’s long-term emission reduction goals. As previously stated, reducing cumulative emissions is vital to avoiding the worst impacts of climate change, given the longevity of greenhouse gases in the atmosphere. We therefore encourage CARB to pursue the allowance budget methodology that would maintain a higher level of ambition in emissions reductions and maintain California’s place as a leader on climate policy.

Additionally, the ‘emissions target method’ would allow for an increase in issued allowances in 2031 over 2030, a highly unusual situation that is not consistent with declining emissions limits – the central feature of a cap-and-trade program.

CARB should consider additional post-2030 scenario options.

CARB has provided two initial post-2030 scenarios, and EDF encourages examination of additional scenarios to reflect more design options. For instance, including an emissions containment reserve (ECR). Just as the APCR provides a critical function for cost containment in the case of high demand and high prices, an ECR provides critical stability and ensures program ambition in the case of lower demand. An APCR and an ECR are both important features in the case of emissions uncertainty. EDF encourages CARB to consider adding an ECR to its modeling of post-2030 scenarios, to provide greater certainty of program ambition as CARB evaluates multiple pathways forward.

CARB must eliminate the biogenic CO₂ exemption and provide consistent emissions accounting across biomass source types.

In their current configuration, the cap-and-trade provisions allow biomass and biomass-derived fuels listed in CCR §95852.2(a) to be exempt from compliance obligations, regardless of the actual carbon intensity of the fuel’s production stages.⁴ The exempt fuel types effectively include the entire array of biogenic fuels, even those made from virgin vegetable oil feedstocks. Under the existing framework, the relative accounting weights of combustion and process emissions do not reflect their respective physical values. Combustion emissions are reported but not counted toward the covered entity’s obligation; well-to-pump emissions are neither fully reported nor fully counted toward the obligation.

⁴ CARB Oct 5 Cap-and-Trade Program workshop, https://ww2.arb.ca.gov/sites/default/files/2023-10/nc-CapTradeWorkshop_Oct052023_afternoon_0.pdf

However, claiming “zero” CO₂ emissions at the point of combustion without considering a fuel’s lifecycle emissions could threaten the integrity of the cap-and-trade program by generating perverse incentives to increase uptake of compliance-exempt biogenic fuels that offer little or no true atmospheric benefit. Although each molecule of CO₂ released during combustion can rightly be considered to cancel out one molecule of CO₂ fixed from the atmosphere into biological matter, the production chain of fuel manufacturing involves numerous process inputs that each incur emissions debts. Therefore, each usage of a biomass-derived fuel under the current regulations hampers the function of the cap when allowed to claim zero CO₂ combustion emissions independently of its actual contribution toward emissions savings. This creates the risk of market distortions, as well as undesired interactions with the LCFS credit trading market.

Furthermore, different fuels with vastly disparate lifecycle analysis (LCA) values all count nominally as zero-emissions under California cap-and-trade accounting. This fails to depict the reality that some fuels at the top of the GHG intensity range can have impacts severalfold those of fuels at the bottom of the range. Ensuring that biofuels are rewarded on a performance basis is crucial to both the integrity and the effectiveness of the cap-and-trade system.

As such, **EDF recommends that CARB fully include biogenic CO₂ emissions in a covered entity’s obligation.** CARB should reward the GHG benefits of bioenergy usage only to the extent that emissions reductions relative to the displaced fossil fuel usage exist on a life-cycle basis, with special attention to carbon leakage.

Although the exempt biogenic combustion emissions are currently calculated and reported per §95121(b), the calculation method itself contains an oversight that will need to be remedied to evaluate and account for biomass and biomass-derived fuels in a manner consistent with AB 32 mandates and Scoping Plan directives. The reference emission factors in 40 CFR Part 98 Table MM-1 and MM-2 (for fossil and biogenic fuels respectively), along with their corresponding values in 40 CFR Part 98 Table C-1, express only the CO₂ released at the point of combustion without characterizing any of the extraction stages, conversion inputs, or other lifecycle emissions embodied in the fuel product.⁵

CARB should update the CO₂ emissions calculations to reflect the full fuel lifecycle – including indirect effects – mirroring the LCFS’ methods. In LCFS accounting, although CO₂ fixation at the point of organic uptake is considered to neutralize CO₂ release at the point of combustion, the upstream stages and associated impacts of fuel production contribute nontrivial quantities of emissions to the LCA value. This includes, notably, a type of carbon leakage in the form of indirect land use change (ILUC) emissions.

Therefore, rather than reporting and exempting point-of-combustion emissions from qualifying biomass and biomass-derived fuels, CARB should assess lifecycle emissions quantities for said fuels for estimating covered entity’s compliance obligation. Fortunately, much of this technical and administrative burden has already been undertaken for the LCFS.⁶

Reported and obligated CO₂ combustion emissions ($CO_{2,r}$) from biofuels should be calculated as follows:

⁵ e.g. feedstock cultivation; feedstock harvesting, collection and delivery; feedstock processing and extraction; feedstock transportation to processing and fuel production facilities; feedstock-to-fuel conversion processes; fuel transportation and distribution.

⁶ For LCFS calculation of fuel carbon intensities, see CCR §95488.3

$$CO_{2,r} = CO_{2,combustion} - ER$$

$$ER = CF_{life} * Q_b * \left(1 - \frac{L_b}{L_c}\right)$$

$$\text{subject to } CO_{2,r} \geq 0$$

where:

ER = lifecycle emissions reductions of each type of biomass derived fuel

$CO_{2,combustion}$ = actual CO₂ combustion emissions of each type of biomass derived fuel

CF_{life} = Fuel-to-CO₂ conversion factor on basis of full lifecycle emissions, where well-to-tank emissions accounts for all greenhouse gas (GHG) emissions and tank-to-wake emissions considers only CO₂ emissions as non-CO₂ GHG emissions are already accounted for elsewhere

Q_b = Total quantity reported of a neat biomass-derived fuel

L_b = Lifecycle emissions value for biomass-derived fuel⁷

L_c = Lifecycle emissions value for corresponding conventional fossil fuel that the biomass-derived fuel displaces⁸

The relative GHG emissions savings of using a given bio-based fuel to displace conventional fossil fuel are reflected in the ratio $\left(1 - \frac{L_b}{L_c}\right)$. This ratio, multiplied by the amount of bio-based fuel reported, multiplied by a fuel-to-CO₂ lifecycle conversion factor, gives the estimated lifecycle emissions reductions, which is then subtracted from the actual combustion emissions to obtain the CO₂ combustion emissions for which the biofuel should be held responsible. This covered emissions quantity applies for both reporting and compliance obligation purposes.

All references to emissions factors, emissions calculations, and CO₂ exemption for biomass and biomass-derived fuels in §95852(i), §95852.2, MRR §95121, and elsewhere should be amended accordingly to provide clear and consistent treatment and reporting across the full suite of feedstocks and pathways.

CARB has a timely launchpad for ambitious climate action.

EDF is deeply supportive of CARB's efforts to pursue a cap adjustment to put California on track to achieve at least 48% reduction in greenhouse gas emissions below the 1990 level by 2030 as laid out in the 2022 Scoping Plan. EDF also encourages CARB to bring about these proposed changes by reducing the allowance pool for direct allocation and auctions to truly ensure near-term emissions reductions. As CARB looks beyond 2030, EDF urges CARB to pursue the path of greatest ambition and use an allowance budget methodology to determine allowance allocation for 2031-2045.

EDF recognizes that CARB has already instituted a performance-based system for transport fuels under the LCFS. CARB's environmental objectives under both programs would be assisted tremendously by aligning emissions accounting under the cap-and-trade system with that of the LCFS. To send appropriate price signals in both markets without inadvertently triggering undesired

⁷ For L_b , use the lifecycle CO₂ intensity calculated pursuant to CCR §95488.3

⁸ For L_c , use the base year (2010) carbon intensity values referenced in CCR §95484

consequences, California's cap-and-trade program must make sure that any given regulatory obligation truly represents what each batch of alternative energy is "worth" to the atmosphere.

California needs a reliable, trustworthy way to track progress towards meeting its climate goals in cooperation with other regions and countries. This means updating and adapting CARB's methods in accordance with the Paris Agreement, through an enhanced transparency framework that harmonizes accounting practices across jurisdictions worldwide. Comprehensive and consistent tabulation of net emissions and emissions savings from bioenergy usage is an essential element for successfully implementing climate action in every jurisdiction.

Furthermore, as we have previously commented, EDF also encourages CARB to use these workshops and modeling efforts to explore other potential program updates, such as facility-level caps, bringing offsets under the cap, and implementing an emissions containment reserve (ECR). For more detail on these recommendations, please refer to our comments on the June 14 workshop.⁹

EDF appreciates CARB's continued climate leadership to update the state's landmark cap-and-trade program. Although California shares the burden of responsibility with other geographies across the US and abroad, California also has the privilege of leading at the vanguard of bold action, having already acquired a historical reputation for forward-thinking policy design. Effectively calibrating the cap to the state's goals, prioritizing near-term allowance adjustments, setting post-2030 allowance allocations using the allowance budget method, and correcting the outdated "zero rating" for biomass are among the many proactive steps CARB can take to accelerate decarbonization of California's economy and set a model for countless other jurisdictions.

We look forward to working closely with staff and stakeholders to ensure the final product of this process is a program that maximizes climate ambition, supports local air quality improvements, continues to provide appropriate compliance flexibility and cost containment, and remains a model for other jurisdictions looking to accelerate their own climate leadership.

Sincerely,

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⁹ EDF comments on CARB's June 14 Cap-and-Trade workshop (<https://ww2.arb.ca.gov/form/public-comments/submissions/4436>)