



**SENATE ENVIRONMENTAL QUALITY COMMITTEE AND
SENATE BUDGET AND FISCAL REVIEW SUBCOMMITTEE NO. 2 ON
RESOURCES, ENVIRONMENTAL PROTECTION, AND ENERGY COMMITTEE**

**SENATORS ALLEN AND BECKER
CHAIRS**

**Tuesday, February 13, 2024
9 a.m. -- 1021 O Street, Room 2100**

JOINT OVERSIGHT HEARING

Cap-and-trade rulemaking

BACKGROUND INFORMATION

1. ***Today's hearing.*** Now is a particularly consequential moment in the history of California's cap-and-trade program, and the Legislature should be aware of what is at stake.

The California Air Resources Board (CARB) has operated the program for a full ten years now, and is in the process of integrating some important lessons into it going forward. Through a number of workshops over the last year, CARB has diligently solicited feedback on the changes they are considering. Nevertheless, the members of the policy and fiscal committees of the Legislature may wish to take this opportunity to be certain they are informed—or even supportive—of the decisions being deliberated.

Because of the lead-time required for regulatory amendments, this is quite possibly the last opportunity to make changes to California's flagship climate program that will take effect before 2030. That is a notable year, because it is both when the cap-and-trade's program explicit supermajority authority expires (AB 398, E. Garcia, 2017), and when the state is required by law to reduce greenhouse gas (GHG) emissions 40% below the 1990 baseline (SB 32, Pavley, 2016).

In short, this cap-and-trade rulemaking matters. It affects whether or not we achieve our climate goals. It affects which Californians thrive and which are left behind as we decarbonize all sectors of our economy. It affects who bears the costs of, and who stands to benefit from, billions of dollars of redistributive pollution-pricing policy. Today's hearing will give legislators an opportunity to understand how these weighty decisions about the nature of the state's flagship climate policy are being considered at CARB and ensure that the Californians who they are elected to represent have their voices heard.

2. *Looking back on the first decade of cap-and-trade*

1. ***Cap-and-trade in a nutshell.*** Administered by CARB, cap-and-trade is a market-based emissions trading program that covers roughly 80% of California's GHG emissions and aims to reduce them. The program imposes a declining, aggregate cap on the amount of GHGs allowed to be emitted in the state each year. Entities that generate GHG emissions as part of its activities are subject to the cap, and can comply by (1) reducing GHG emissions, (2) obtaining an allowance to emit, or (3) purchasing offsets (i.e. supporting a GHG reduction project). Allowances are issued by CARB each year—some are provided freely to certain entities, such as utilities, whereas others are auctioned off, which generates revenue for the Greenhouse Gas Reduction Fund (GGRF).
2. ***Legislative direction.*** The Legislature has proposed, contemplated, and passed numerous pieces of legislation that affect the cap-and-trade program. Although not exhaustive, the following list provides some notable context. *What role can and should the Legislature play in directing CARB's design of the cap-and-trade program, both before and after 2030?*
 - i. AB 32 (Núñez, Pavley, Chapter 488, Statutes of 2006) directed CARB to determine the 1990 statewide GHG emissions level to be achieved by 2020, authorized CARB to adopt regulations, until December 31, 2020, that utilize market-based compliance mechanisms to reduce GHG emissions, and required CARB to make numerous considerations as part of the market-based compliance mechanism, including but not limited to ensuring actions taken do not disproportionately impact low-income communities, are cost-effective, and minimize leakage.
 - ii. Reauthorization:
 1. AB 398 (E. Garcia, Chapter 135, Statutes of 2017) reauthorized cap-and-trade through December 31, 2030, and made numerous other stipulations, including but not limited to: requiring CARB to include specified price ceilings, price containment points, offset credit compliance limits, and industry assistance factors for allowance allocation in the cap-and-trade program.
AB 398 was signed into law July 25, 2017.
 2. AB 617 (C. Garcia, Chapter 136, Statutes of 2017) was a companion bill to AB 398 and required, among other things, CARB to establish a process for the creation of Community Emission Reduction Plans, and to prepare a statewide strategy to reduce specified emissions in communities affected by a high cumulative air pollution exposure burden.
AB 617 was signed into law July 26, 2017.

3. SB 775 (Wieckowski, 2017) would have authorized a new cap-and-trade indefinitely with specified modifications, including but not limited to: the removal of offsets from the program, a statutorily set and increasing price floor and ceiling, the elimination of freely-allocated allowances in favor of a carbon border tax, and significant dividends provided to Californian residents. *SB 775 did not receive a hearing.*
4. AB 378 (2017, C. Garcia, Holden, E. Garcia) would have authorized cap-and-trade through December 31, 2030 and integrated specified air quality performance requirements into the program, including no-trade zones or facility-specific declining GHG emissions limits, and prohibited facilities that do not meet the specified air quality standards from being allocated allowances. *AB 378 failed passage on the Assembly Floor.*

3. **Impact on GHG emission reductions.** According to CARB's Pollution Mapping Tool (v2.6), total GHG emissions from cap-and-trade covered entities have fallen approximately 18% between 2013 and 2020 (the last year data are available). That is not to say that cap-and-trade is singlehandedly (or even primarily) responsible for that reduction, but it is apparent that overall emissions from covered entities are trending downwards.

Despite that good news, numerous confounding details and questions remain. *Is that pace of emission reduction sufficient to reach our climate goals? Where specifically have emission reductions taken place? To what extent has cap-and-trade driven these reductions? Should we expect the pace to change as the price of allowances changes too?*

4. **Cap-and-trade and existing air quality disparities.** On the topic of cap-and-trade, the 2022 Scoping Plan Update clearly stated, "Importantly, the Program should support air quality benefits, especially in overly burdened communities, and not exacerbate existing air quality disparities." Whether or not California's cap-and-trade program has done so to date is the subject of significant and ongoing academic debate.

On one hand, a 2020 study by economists at the University of California - Santa Barbara looked at ten years of data from facilities covered by cap-and-trade versus those that were not, and the authors concluded that the implementation of cap-and-trade somewhat closed the air quality gap between environmental justice communities and wealthier neighborhoods. However, that specific study has since been the focus of multiple reports, with a 2022 report from the University of Southern California Dornsife Equity Research Institute finding that the study had some technical methodological and data issues. The USC researchers arrived at potentially conflicting conclusions, finding for instance that the "least improved" regions for air quality were also the most disadvantaged when they examined similar data through other methods. In short, despite ten years of experience running cap-and-trade in California, the confounding nature of complex air quality data makes it impossible to draw ironclad conclusions either way about the environmental justice impacts of cap-and-trade at this time.

Regardless of the complex and nuanced debate unfolding in this space, one simple fact remains: by design, California's cap-and-trade program does not direct where emissions reductions occur. *Should California's cap-and-trade program be designed to apply differently to covered entities in different areas? What program design elements would best allow California's cap-and-trade program to help reduce existing air quality disparities?*

5. ***Continuous and discretionary appropriation of auction proceeds.*** The GGRF is the depository for revenues generated from the sale of cap-and-trade allowances. In recent years, cap-and-trade auctions have raised between \$3 billion and \$4.3 billion per year, totaling \$26.4 billion between 2013 and 2023. Multiple factors influence revenues—including interest in purchasing allowances from outside investors, confidence in the longevity of the program, and the balance of supply versus demand for allowances.

As a result of several bills over the years, roughly 65% of annual GGRF revenues is now dedicated to statutorily required continuous appropriations. Since 2014, High-Speed Rail (receiving 25% of GGRF revenues), Affordable Housing and Sustainable Communities (20%), Transit and Intercity Rail (10%), and Low Carbon Transit Operations (5%) have collectively accounted for 60% of all GGRF spending. More recently, Safe and Affordable Drinking Water (\$130 million) and Healthy and Resilient Forests (\$200 million) were added as continuous appropriations in 2019 and 2022, respectively. Notably, pursuant to AB 680 (Burke, Chapter 746, Statutes of 2021), the vast majority of all projects supported by continuous GGRF appropriations will, by July 1, 2025, will be required to meet specified labor standards, including fair and responsible employer standards and inclusive procurement policies.

After accounting for these statutory spending commitments, the remainder of annual GGRF revenues are available for the state to spend on other activities, at its discretion (and pursuant to other statutory requirements). The Legislature typically appropriates GGRF funds as a part of the annual budget process, and spending priorities for these “discretionary” revenues can vary each year. Past expenditures have focused on low-carbon transportation programs, community-based air protection, and agriculture programs. The Legislative Analyst's Office has noted in several recent reports on GGRF expenditures that the existing statutory commitments were made under different policy environments than exists today.

CARB reports annually on the cost-effectiveness (tons of CO₂ reduced per dollar spent) of GGRF programs. However, the LAO and State Auditor have raised concerns about limitations in the estimates the administration presents for the cost-benefit data of GGRF expenditures, particularly including interactions with other programs. A recent estimate by CSG of the cost-effectiveness of the GGRF fund since the start of the cap-and-trade program finds that California has spent on average \$1,003 per ton of CO₂ removed. Expenditures for the High Speed Rail project were excluded from this analysis, given the project has not resulted in any emissions reductions yet; however, the researchers estimate the future cost of abatement from the project to be \$1,832 per ton of CO₂ abated.

Considering the present state of the program (upwards of \$4 billion of revenue in recent years) and the potential for that amount to increase (due to program changes being contemplated), the Legislature should look hard at where the money raised is going. *Do the statutory continuous appropriations reflect present values and priorities? Given the impacts higher cap-and-trade compliance costs may have on consumers, how can GGRF monies support equity?*

6. **Market design considerations.** Cap-and-trade is an exceedingly technical and complicated program, and the Legislature has relied upon experts to help parse the details and nuances accordingly. As the program's administrator, CARB is the foremost expert on the program. However, rather than articulate the program's role as part of the 2022 Scoping Plan Update, CARB largely deferred discussions of cap-and-trade's programmatic design and role in achieving the state's climate goals to the now-ongoing rulemaking process.

Fortunately, as part of the 2017 cap-and-trade reauthorization under AB 398, the Independent Emissions Market Advisory Committee (IEMAC) was established, and the Legislative Analyst's Office (LAO) was tasked with reporting annually on the state's climate policies. Both of those organizations have provided ample feedback on the current and potential future structure of California's cap-and-trade program, and representatives will present a portion of their work at the hearing. However, no amendments have been made to the cap-and-trade regulation since 2018, when the changes required by AB 398 were implemented. As such, no recommendations requiring substantial changes to the program have been adopted. Several potential program design changes that have been raised for consideration are described further below. *How has CARB implemented input from IEMAC and LAO in cap-and-trade?*

3. **What might the future hold for cap-and-trade in California?**

1. **Increased ambition.** As part of the 2022 Scoping Plan Update, CARB modeled different emission reduction trajectories to achieve 2045 carbon neutrality (as required by AB 1279, Muratsuchi, Chapter 337, Statutes of 2022). Under current law (i.e. SB 32), California is required to reduce its GHG emissions to 40% below the 1990 level by 2030. The challenge and magnitude of doing so has been the subject of multiple hearings in the past year. Nevertheless, CARB determined that in order to be on track for carbon neutrality in 2045, California should instead strive for a 48% reduction by 2030; this is a monumental undertaking.

CARB acknowledged that increasingly ambitious climate goals would require increasingly ambitious climate policies, including cap-and-trade. However, the 2022 Update did not attempt to quantify a percentage of total emission reductions to reach climate goals that would be attributable to cap-and-trade, as past Scoping Plan Updates had. CARB instead assessed all actions not covered by the model used for the Scoping Plan Update (such as cap-and-trade and a number of other regulations yet to be implemented), and found that collectively those policies would need to account for 79 MMTCO_{2e} to be on track for reaching our goals. The Scoping Plan Update also acknowledged that greater reductions from non-cap-and-trade policies would affect the relative need of cap-and-trade to serve as a "backstop" for emissions as it had been considered in the past.

Despite not putting forth hard numbers on the role cap-and-trade would be required to play, CARB summarized the issue and their next steps thusly:

“... The Cap-and-Trade Program must continue to be able to scale across a range of possibilities. With passage of AB 1279 and the need to accelerate the 2030 target, CARB will initiate a public process to utilize the modeling results from this Scoping Plan, specifically the Scoping Plan Scenario, to evaluate and potentially propose changes to the design of the Program, including the annual caps. This process will ensure that the Program supports an increased ambition for 2030 while retaining the ability to scale as other factors, such as changing economic conditions and implementation of non Cap-and-Trade programs, impact the actual emissions at the sources covered by the Program. Any changes to the Program must continue to support a well-designed system that continues to send a steadily increasing price signal, minimizes for leakage, reduces emissions in the covered sectors toward the state’s targets, is cost-effective and technologically feasible, and avoids energy rate spikes. Importantly, the Program should support air quality benefits, especially in overly burdened communities, and not exacerbate existing air quality disparities.”

As ambition for GHG emission reductions increases to meet our goals, it is likely the impacts of cap-and-trade will increase as well. *How is CARB increasing the ambition of the cap-and-trade program to reflect the increased ambition of a 48% emission reduction target? How do the proposed changes to cap-and-trade consider non-cap-and-trade policies?*

2. **Post-2030.** When the Legislature passed AB 398 in 2017, it staved off the uncertainty and wildly fluctuating auction results that had plagued the cap-and-trade program as it approached its statutory 2020 end date. That explicit reauthorization expires in 2030, and so the Legislature should be aware of that and consider the existence and design of the program beyond 2030. While today’s hearing is intended to focus on CARB’s ongoing cap-and-trade rulemaking, the fact is the behavior of the market before 2030 will explicitly depend on the fate of the program after 2030. This dynamic has been described at length in the LAO’s 2023 report on the 2022 Scoping Plan Update, and is also the subject of recent modeling by researchers at the University of California – Davis that was commissioned by CARB.

The Legislature should carefully consider the interplay between program authorization, program design, and allowance price. Without reauthorization, demand for allowances between now and 2030 likely drops, due to the availability of banked allowances. With reauthorization, allowance price likely climbs, as described by the UC Davis modeling work mentioned above. Depending on their impacts on allowance supply and demand, any programmatic change to cap-and-trade would likely impact allowance price as well. *What does the Legislature hope to see cap-and-trade accomplish between now and 2030, and post-2030? What changes might be necessary to the program to enable those accomplishments?*

3. **Considering programmatic reforms.** There is no shortage of ideas for how to reform California’s cap-and-trade program. The following concepts are intended to provide members with some brief context and familiarity with a few changes that have been proposed for cap-and-trade. Each brief and simplified description does not attempt to capture the breadth and complexity of the topic. *How might each of these reforms affect affordability, leakage, cost-effectiveness, and other statutorily required considerations? How might they help the*

Legislature to realize some desired changes to the role of the cap-and-trade program? Do any of these reforms require legislative action, or are they possible under CARB's existing authority?

Potential market design change considerations include, but are by no means limited to:

- i. **Allowance budgets.** CARB has identified approximately 310 million unused or “banked” allowances in circulation. These allowances could be retired in place of reducing emissions or purchasing new allowances, and so this glut risks undermining the program’s stringency going forward. CARB is assessing various “Cap Adjustment Factors” and other methods to gradually, predictably, and equitably address the number of banked allowances.

By adjusting the supply of allowances, it is to be expected that the price of an allowance at auction would increase as a result. The specific extent of that change is the topic of much discussion and debate, and CARB has commissioned modeling from researchers at the University of California – Davis to understand the range of possible cost impacts.

- ii. **Emissions Containment Reserve (ECR).** An ECR is a mechanism intended to support a cap-and-trade program by reducing the number of emissions allowances that are sold at low prices. If prices at auction remain near the price floor, fewer allowances would be made available for purchase – creating a temporary tightening of the emissions cap.
- iii. **No-Trade Zones.** “No-Trade Zones” or “Facility-level emission caps” refer to a set of practices that would limit certain covered entities’ ability to comply with cap-and-trade using allowances, based on their location and/or contributions to local air pollution. One example could be requiring covered entities who lag in reducing emissions and are located in disadvantaged communities to comply with cap-and-trade more by reducing emissions (as opposed to retiring allowances or offsets) than they might otherwise. Numerous permutations of this basic idea could be applied.

No-Trade Zones for California’s cap-and-trade program have been seriously contemplated at least as early as 2017 (as part of AB 378 (C. Garcia), a cap-and-trade reauthorization proposal that failed passage on the Assembly floor) and were spotlighted in the 2022 annual IEMAC report.

- iv. **“Offsets under the cap.”** An offset is a compliance instrument generated by an entity who is not included in cap-and-trade and purchased by one who is. An issue may arise, however, when the action taken to generate the offset is undone (such as a forest that was protected from logging subsequently burning down). In short, if offsets are not as reliable as the emissions they are intended to negate, capped and uncapped emissions could rise unchecked, while appearing to balance out on paper.

In their cap-and-invest program, Washington addressed this issue by reducing the annual allowance budget by an amount equivalent to offset use. This puts “offsets under the cap,” in the sense that capped emissions are necessarily reduced by the use of offsets. This approach was also offered in last year’s IEMAC report as a possible approach to resolve offset concerns in California. Under a hypothetical worst-case

scenario where every single offset did not correspond to a real emission reduction, the program would still achieve its emission reduction goals. It must be noted, however, that Washington's cap-and-invest program has also been beset by cost concerns, and is currently the subject of a referendum campaign. Not to say that the program's treatment of offsets is solely responsible, but it would be expected to increase the cost of compliance somewhat.

- v. ***Carbon capture for cap-and-trade compliance.*** As the regulation exists today, carbon capture and sequestration (CCS) is not counted towards cap-and-trade compliance. For example, if a covered entity was required to reduce its emissions by 10 tons of carbon and it installed CCS systems to capture and permanently store 10 tons of carbon, the entity would still need to reduce emissions or purchase compliance instruments to account for the 10 tons.

During the June 14th workshop, CARB staff noted that they are evaluating opportunities to align the treatment of CCS and carbon dioxide removal (CDR) within cap-and-trade and the Scoping Plan, in alignment with the requirements in SB 905 and to obtain the Scoping Plan targets of 20 MMT and 100 MMT of CO₂ reduction by 2030 and 2045 through carbon capture and removal. This remains an active topic of debate and discussion, and it is yet unclear what amendments will ultimately be proposed. Any tying together of cap-and-trade compliance with CCS deployment must be approached carefully.

To the extent that CCS can operate as an effective and reliable way to mitigate emissions from a point source, this could be a meaningful and sensible issue to address. However, it would be essential at the very least for CARB to develop rigorous protocols that ensure any carbon captured from point sources is stored—securely, verifiably, and permanently—before these activities can reduce a compliance obligation.

- vi. ***Treatment of industry leakage assumptions.*** Industries that are trade-exposed are vulnerable to moving production out of state if the cost threatens their ability to compete with out-of-state producers. When a source of emission shifts out-of-state due to increased costs of electricity or inability to compete, this is called 'leakage,' and is counterproductive to the end goal of truly reducing the state's emissions. To mitigate this risk, CARB provides free allowances to emission sources at high risk of leakage and sets a level of industry assistance factors (IAF) that determine how many free allowances (and financial assistance) the source of emission needs. This policy is valuable for preventing emission leakage and maintaining California's business competitiveness.

In AB 398, the Legislature required CARB to treat all industries as high risk of leakage, regardless of their true level of leakage risk, which requires CARB to provide free allowances annually to all industrial sources of emissions. This means that emission sources that were previously identified by CARB as medium and low risk are being provided an excessive level of financial support through free allowances. This, in turn, reduces potential GGRF revenues and limits CARB's ability to target financial assistance toward higher leakage risk industries.

As part of the current rulemaking, CARB has commissioned two studies assessing emissions leakage in the electricity and industrial sectors. CARB staff have said these studies will assess the emissions leakage potential of industries as well as potential measures that could reduce leakage, as well as provide a retrospective review and opportunities for further preventing leakage from the electricity sector. This report will be available to the Legislature at the end of 2025. CARB is additionally coordinating with the California Independent System Operator (CAISO) to update leakage treatment for the extended day ahead market (EDAM).

4. *How does the present rulemaking address the past, and prepare us for the future of cap-and-trade?*

1. ***Informal workshops.*** After announcing early last year that they would begin an informal workshop process ahead of a formal regulatory process, CARB has conducted four workshops on potential amendments to the cap-and-trade regulation, as well as two virtual community meetings to date.

By bringing CARB and several expert stakeholders together under the auspices of this joint hearing, committee members should gain an understanding of what proposals CARB has assessed so far, which are expected to be covered in any future informal workshops, and what is not currently planned to be considered. *What, if any, topics is CARB hoping to cover in future informal workshops? Is the Legislature able to request topics be included in future informal workshops?*

2. ***Formal regulatory actions.*** At some point, CARB staff will issue draft regulatory text as part of a proposed rulemaking. The mechanics and timelines of that process will be governed by the Administrative Procedures Act, and in short will kick off up to one year of prescribed documents being released (including the Standardized Regulatory Impact Assessment and Initial Statement of Reasons), several formal public comment periods and responses, and ultimately a presentation to—and decision made by—the CARB Board.

As partners in shaping California's climate policy leadership, the legislators of the gathered committees should ensure they understand how and when they may best engage with CARB during this process to productively contribute to the discussion.