the climate center

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Reforming California's Cap and Trade Program Policy Brief

The Climate Center Policy Guidance Document

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Executive Summary

The California Cap and Trade Program plays a pivotal role in the state's efforts to reduce greenhouse gas emissions. The program is currently under review before the upcoming 2025 compliance period, opening a critical window of opportunity to address and correct the program's recognized shortcomings. In this policy brief, we outline three crucial enhancements to improve the effectiveness of the program in advancing California's climate goals.

First, we propose introducing an Emission Containment Reserve to address the oversupply of compliance instruments, which has led to artificially low carbon prices for much of the program's history. This step is essential for fostering a more balanced and efficient carbon market.

Second, we recommend phasing out offsets as compliance instruments. Empirical evidence suggests that offsets have not provided reliable emissions reductions.[1] Suggestions are provided for potential alternative instruments. This strategic shift aims to enhance the overall impact of the program.

Finally, we advocate for a gradual reduction and ultimately the phaseout of subsidies provided through the free allocation of allowances. This significant move will redirect funds toward the development of carbon-free technologies, further advancing the program's environmental objectives.

Introduction

Initiated in late 2012, California's Cap and Trade Program is part of a suite of policies designed to reduce greenhouse gas emissions. Cap and trade is a market-based system that establishes a series of annual emissions limits — or caps — which decline over time[2] for a consortium of entities until a predefined target is reached. Companies that produce carbon emissions purchase compliance instruments called allowances for each ton of greenhouse gas emissions they produce.

Every year, these allowances[3] are allocated to carbon-emitting companies, primarily through quarterly auctions held by the California Air Resources Board (CARB) or through trading in a secondary market.[4] Companies can buy and sell allowances and this market trading establishes a price for greenhouse gas emissions.

[1] https://grist.org/wildfires/california-forests-carbon-offsets-reduce-emissions/
[2] The cap declines about 5 percent annually through 2030.
[3] An allowance is 1 ton of greenhouse gas emissions.
[4] Some allowances are allocated free of charge.

California's cap and trade market consists of entities that emit a minimum of 25,000 metric tons of carbon dioxide equivalent (CO_2e) annually. It spans electricity generation (including imports), industrial entities such as cement, refining, oil and gas production, fuel distributors (natural gas and petroleum), and more. Collectively, these sectors account for roughly 85 percent of California's greenhouse gas emissions.

Emissions-intensive, trade-exposed (EITE) industrial facilities and electric and gas utilities receive free allowances, but the utilities are required to sell their allowances and return the proceeds to the customer. This accommodation for EITE industries serves as a safeguard against "leakage," which refers to a company relocating to a non-regulated state to avoid allowance costs while continuing to pollute. For other market participants, allowances must be procured through quarterly auctions, with the auction revenues directed to the Greenhouse Gas Reduction Fund (GGRF). The state uses these funds to implement programs aimed at further reducing greenhouse gas emissions. Per SB 535 and AB 1550,[5] 35 percent of these GGRF funds are designated to benefit priority populations, including disadvantaged and low-income communities.[6]

CARB is the state agency responsible for developing plans and implementing policies to achieve California's legally binding emissions reductions goals. It is noteworthy that these policies delivered the AB 32 reduction goal of reaching 1990 greenhouse gas emissions levels by 2020 well ahead of schedule. Ongoing compliance continues to be robust and the state's economy continues to grow.

CARB issues a comprehensive Scoping Plan every five years, outlining plans and policies to achieve emissions reductions goals. The 2017 Scoping Plan laid out the pathways to reach 40 percent emissions reductions below 1990 levels by 2030, and the program was described in detail in the 2016 Cap and Trade Regulation.[7] According to that plan, cap and trade is expected to provide about 38 percent of the required reductions, while direct regulations (such as the Low Carbon Fuel Standard and Renewable Portfolio Standard) will generate the remaining reductions.

CARB adopted its latest Scoping Plan[8] in November 2022, delineating plans to achieve a minimum 40 percent reduction in statewide greenhouse gas emissions from 1990 levels by 2030, with the ultimate goal of reaching 85 percent reductions from 1990 levels by 2045. The plan explored several potential paths for emission reductions and adopted a preferred scenario that aims for 48 percent emissions reductions.

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[5] https://calepa.ca.gov/envjustice/ghginvest/
[6] https://www.caclimateinvestments.ca.gov/about-cci
[7] https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2016/capandtrade16/ctfinro.pdf?_ga=2.157555954.993336411.1699898441-1038273819.1664211588
[8] https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp-es.pdf

It is worth noting that the 2022 Scoping Plan has faced significant criticism, including from the Legislative Analyst's Office (LAO),[9] the Independent Emissions Advisory Committee's (IEMAC) 2022 Report,[10] the Environmental Justice Advisory Committee (EJAC),[11] and other stakeholders.

One of the primary criticisms of the 2022 Scoping Plan is the absence of a comprehensive set of policies to guide the achievement of the proposed emissions reductions goals. The lack of a clear roadmap for reaching these goals raises serious concerns about the likelihood of accomplishing them in the given time frame.

As noted by the LAO,[12] historically, cap and trade has been considered the "backstop" for achieving emissions reductions goals. It was designed to bridge the gap between the necessary emissions reductions in 2030 and those achieved through direct, non-market-based policies. However, in the 2022 Scoping Plan, discussion of cap and trade is notably limited, with only cursory acknowledgment that updates to the program are required. CARB commits to addressing these updates as part of the broader modeling process for the 2022 Scoping Plan.

In 2023, CARB initiated a proceeding to review the Cap and Trade Program over the next seven years, aiming to assess its necessary recalibration and revisions in light of new emissions inventory data and more ambitious greenhouse gas reduction goals. On July 23, 2023, CARB hosted the first cap and trade workshop, during which it outlined the proposed analyses for forthcoming updates to the Cap and Trade Program. This workshop examined key aspects of the program, including the recalibration of the cap and trade baseline given the latest emissions inventory data, as well as the formulation of emissions reduction trajectories that align with the 2022 Scoping Plan scenarios of 40, 48, and 55 percent reductions by 2030.

Furthermore, in accordance with regulatory statutes, CARB is set to conduct a comprehensive economic analysis of the costs, benefits, and broader macroeconomic implications of the proposed regulations and alternative scenarios. This analysis will be reviewed by the California Department of Finance. Additional workshop discussions addressed potential modifications to the allowance allocation formulas, particularly for electric and gas utilities, as well as EITE firms.

CARB held another workshop on October 5, 2023 to consider further amendments to the cap and trade regulation.[13]

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[9] https://lao.ca.gov/Publications/Report/4656#:~:text=Conclusion-,Summary,the%201990%20level%20by%202045.
[10] https://calepa.ca.gov/wp-content/uploads/sites/6/2023/02/2022-ANNUAL-REPORT-OF-THE-INDEPENDENT-EMISSIONS-MARKET-ADVISORY-COMMITTEE-2.pdf
[11] https://caleja.org/wp-content/uploads/2022/03/Letter-to-CARB-EJ-Recommendations-for-2022-Scoping-Plan-03-09-22_revised-2-1.pdf
[12] https://lao.ca.gov/Publications/Report/4811#:~:text=Historically%2C%20cap%2Dand%2Dtrade,the%20state%20meets%20its%20targets
[13] https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/cap-and-trade-meetings-workshops

Revisions to the California Cap and Trade Program and regulation will be implemented within the next year. These revisions will incorporate the results of forthcoming analysis and inputs from past and future workshops. In this policy brief, we discuss three major problem areas with California's Cap and Trade Program and suggest reforms. These proposals incorporate recommendations from the Independent Emissions Market Advisory Committee, the Legislative Analyst's Office, and environmental justice communities. Where appropriate, we provide additional commentary on alternative reform options for the program that are based on measures adopted by other states and countries.

Oversupply of Allowances

California policymakers must address the imbalance between the demand and supply of allowances so that the carbon market functions effectively.

A key issue with the California Cap and Trade Program is that there is a fixed, annual supply of allowances determined via CARB's Scoping Plan, while there is inherent uncertainty about the demand for allowances. Demand variations occur for various reasons, including weather conditions, economic factors, pandemics, and successful emissions reductions efforts through direct regulations. Historically, the result has been a consistent oversupply of allowances relative to demand within the carbon market, leading to an artificially low price on carbon pollution, which lowers incentives to reduce emissions.

Another factor contributing to this oversupply is the accumulation of banked allowances, which are compliance instruments that do not expire and can be used at any time.[14,15] These banking provisions are intended as a cost mitigation measure to help businesses cope with potential spikes in allowance prices. However, in practice, allowance prices in California have largely remained close to or at the floor price for nearly all compliance periods. CARB must recalibrate the pool of compliance instruments to realign supply and demand, allowing the market to function as intended.

It is worth noting that the oversupply issue is not unique to California and has affected other emissions trading programs. These include the Regional Greenhouse Gas Initiative (RGGI) in the Northeast and mid-Atlantic as well as the European Union Emissions Trading System (EU ETS), both of which took steps to remove allowances from the pool of compliance instruments in response to excess supply.

[14] There are some holding limits for each entity and this gives the maximum number of allowances that an entity may hold at one time. This site gives the formula and there are limited exemptions. https://ww2.arb.ca.gov/sites/default/files/cap-and-trade/holding_limit.pdf
[15] Note that there are no limits on the number of offsets that can be banked and held. These limits have not prevented the buildup of excess allowance supply. http://www.nearzero.org/wp/2018/12/13/holding-limits-dont-constrain-banking-in-californias-cap-and-trade-program/

Unlike some other cap and trade programs, California lacks a mechanism to adjust allowances downward when prices are low. Many newer cap and trade programs use an **Emission Containment Reserve (ECR)** to automatically decrease the quantity of allowances if allowance prices fall below a certain threshold. The introduction of an ECR in the California Cap and Trade Program would add this flexibility, help address market imbalances, boost the carbon price, provide incentives for innovation in low-carbon technologies, and potentially increase revenues in the GGRF, thus funding more state emissions reductions initiatives.

In California, increases in allowance supplies are triggered by specific price thresholds through the Allowance Price Containment Reserve (APCR).[16] AB 398 modified the APCR to contain a two-tier price trigger that increases allowances from predetermined reserves and introduced a hard price ceiling. While these upward allowance provisions were designed to mitigate high prices and help contain costs for market participants, they have not been triggered yet, leaving implementation details uncertain.

Another important reform to allowances is to adjust the supply of future annual allowances to align with revised emission forecasts based on updated inventory data.

Problem

Address the oversupply of allowances, as these threaten to derail attainment of the annual 2030 (and beyond) emissions reduction targets.

Proposed Reform

Institute an Emission Containment Reserve (ECR), which automatically lowers allowance supply in response to low allowance prices.

While the practice of banking allowances offers financial flexibility for market players to manage potential price increases, it complicates the tracking and monitoring of allowance supply within the program. This issue has been particularly problematic in California. One possible reform is to retire unused, banked allowances after three years — as is done in the RGGI — to address the buildup of allowances. Another would be to sunset this provision to prevent the banking of future allowances altogether.

[16] The Allowance Price Containment Reserve (APCR) is a soft price cap that increases the supply of allowances if the price goes above a critical trigger point. There is also a hard price ceiling that is set at $81.50 in 2023.
https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/cost-containment-information

Lack of Rigor in Offset Protocols

California policymakers must ensure rigorous offset protocols so they deliver real, additional emission reductions.

In California, limited offset use is permitted as a means of compliance. The limit is 4 percent of the annual compliance obligation between 2021 and 2025 and 6 percent from 2026 to 2030. The use of offsets has been severely criticized by the environmental justice community, since it allows oil refineries and other polluting industries to continue their carbon-intensive operations and rely on offsets to meet compliance obligations. This has led to continued or increased levels of associated co-pollutants in frontline communities, often situated in areas that already do not meet clean air standards.[17]

In addition to environmental justice concerns, there is substantial evidence that offsets have not yielded the levels of emissions reductions claimed, thus violating their commitment.[18,19] In practice, offset protocols have not been rigorous enough. Offsets in California operate in a way that increases the annual pool of allowances for entities and thus further contributes to the oversupply problem.

In contrast, offsets in the Washington state cap and invest program operate below the cap, so the use of offsets *lowers* the allowance pool. Oregon replaces offsets altogether, instead introducing a community climate investment fund currently priced at $123 per credit.[20] This fund allows for the purchase of a limited number of allowances at the set rate of $123 per metric ton. This compliance instrument eliminates the measurement issues with offsets and directs funds to local environmental justice concerns. New York, which is also planning a cap and invest program, has stated that offsets will likely not be allowed in its program.[21]

Given the challenges and criticisms associated with the use of offsets in California, we recommend that offsets be banned. An alternative is to replace them with an investment fund similar to Oregon's model. Another approach could involve the development of verifiable insets instead of offsets, wherein investments aimed at reducing Scope 3 (supply chain) emissions could serve as compliance instruments. Another option, albeit less preferable, would be to require offsets to be counted below the emissions cap, mirroring the Washington state model.

[17] https://peri.umass.edu/component/k2/item/1740-not-so-clear-a-comment-on-do-environmental-markets-cause-environmental-injustice
[18] https://onlinelibrary.wiley.com/doi/10.1111/gcb.16380
[19] https://www.biorxiv.org/content/10.1101/2021.04.28.441870v1.full
[20] https://www.oregon.gov/deq/ghgp/cpp/pages/community-climate-investments.aspx
[21] https://www.nyserda.ny.gov/About/Newsroom/2023-Announcements/2023-1-10-Governor-Hochul-Unveils-Cap-and-Invest-Program

Problem

Offset protocols are not rigorous and studies[22] have shown that the purported emissions reductions are often not long-lasting, permanent, or additional.[23]

Proposed Reform

Ban the use of offsets in the California Cap and Trade Program. Replace offsets with insets.[24] If offsets are allowed, then count them below the cap, as is done in the Washington state cap and invest program.[25]

Addressing environmental justice concerns, in particular, could involve establishing no-carbon-trading zones[26] in non-attainment areas and/or imposing specific air quality targets at the facility level. However, these solutions do not resolve the integrity issues associated with offsets.

Free Allowances for Emissions-intensive, Trade-exposed Firms, and Electric and Gas Utilities

California policymakers must move away from subsidizing carbon pollution.

In California, roughly 50 percent of allowances are given for free to electric and gas utilities and to EITE industries perceived to be at risk of relocating to non-capped states, a phenomenon known as leakage risk. Two significant concerns arise regarding these free allocations.

First, the quantity of allowances has been based on a formula that uses current technologies as the benchmark for performance. CARB needs to shift the basis to best practice, innovative technologies. Secondly, these free allowances continue to subsidize business as usual practices. The climate emergency demands that CARB adopt robust policies that redirect these subsidies and promote decarbonization in emissions-intensive sectors.

[22] https://grist.org/wildfires/california-forests-carbon-offsets-reduce-emissions/
[23] https://onlinelibrary.wiley.com/doi/10.1111/gcb.16380
[24] An accurate and verified Scope 3 (supply chain) emissions inventory must be in place for insets to operate. This is not common practice and could be a barrier for implementation of this policy. https://www.weforum.org/agenda/2022/03/carbon-insetting-vs-offsetting-an-explainer/
[25] https://waconservationaction.org/carbon-offsets-and-how-they-relate-to-the-climate-commitment-act/
[26] https://media.rff.org/documents/Report_23-09v3.pdf

An alternative approach, used in the EU ETS, is to use Contracts for Differences.[27] This financial mechanism addresses the uncertainty about low carbon prices that often creates a financial barrier for low-carbon technology development. Many fossil-free technologies would be competitive with high greenhouse-gas-emitting technologies if polluters were forced to pay the real social cost of their pollution.[28,29] High-enough carbon pollution prices will encourage private financing of these costly, innovative technologies, but political constraints prevent such high prices across the economy. Since the development of low-carbon technologies provides huge societal benefits, it is appropriate that state support be used to bridge this financial gap.

In this system, the state can offer a Contract for Difference with the technology investor, guaranteeing a predetermined carbon pollution price for a fixed term. The agreed reference price for carbon will make the carbon-free technology competitive with the polluting technology and ensure financial viability of these projects. The state would cover the difference between the reference carbon price and the actual market carbon price, with this subsidy diminishing over time as carbon prices rise. In California, funding for such projects could come from the GGRF.

Problem

Free allowances are given to emissions-intensive, trade-exposed (EITE) firms, and electric and gas utilities. These make up about 50 percent of all the allowances in the market. This is a substantial subsidy to polluting firms, which dilutes incentives for carbon reductions in these sectors.

[27] https://www.next-kraftwerke.com/knowledge/contract-for-difference
In the energy world, Contract for Difference is a subsidy model in which both positive and negative differences from a reference price are paid out to the contractual partner.
[28] The social cost of carbon is an estimate, in dollars, of the economic damages that would result from emitting one additional ton of carbon dioxide. https://www.rff.org/publications/explainers/social-cost-carbon-101/
[29] The University of California uses an equity-weighted social cost of carbon at $246 per metric ton. https://sustainability.ucsc.edu/news-events/news/s-cost-carbon-2023.html

Proposed Reform

Reform the allowance allocation for EITE industries to provide incentives for innovation. The benchmarks used reflect current industrial practices and provide little incentive to innovate. In addition, the urgency of the climate crisis demands a reevaluation of this system in which pollution is subsidized. These subsidies should be redirected to promote decarbonization. The European Union Emissions Trading System (EU ETS) has some interesting new proposals[30] that should be considered for adoption in California, including the phaseout of free allowances. Specifically, the use of Contracts for Differences can be used to turbocharge nascent decarbonization technologies, such as scaling up battery storage development, and to provide funding for offshore wind and other innovative, zero-carbon technologies.

Meanwhile, in the EU ETS, there are plans to gradually phase out[31] free allowances for EITE firms. In addition, beginning in 2026, importers into the European Union will be required to report the total verified emissions associated with their products and pay a carbon price for these emissions. Specifically, importers will have to provide Carbon Border Adjustment Mechanism (CBAM)[32] certificates corresponding to the carbon content of their products. This will remove the competitive disadvantage faced by EITE firms within the European Union who have to buy carbon pollution allowances. This also provides strong economic incentives for innovation and research to advance decarbonization within these sectors.

As of today, the interstate commerce clause prohibits this practice in California. But with federal legislation related to the interstate commerce clause likely on the horizon, it may be an option in the near future and one California lawmakers should consider.

[30] https://institutdelors.eu/wp-content/uploads/2022/02/PB_220203_No-more-free-lunch_Pellerin-Carlin.pdf
[31] https://institutdelors.eu/wp-content/uploads/2022/02/PB_220203_No-more-free-lunch_Pellerin-Carlin.pdf
[32] A Carbon Border Adjustment Mechanism (CBAM) holds exporters financially responsible for the carbon content of the products they produce upon that product's import. For example, if a given entity exports steel to the European Union, that entity will soon be required to pay for the carbon content of the steel under the EU ETS. https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en

Conclusion

In conclusion, the California Cap and Trade Program is a crucial instrument in the state's efforts to reduce greenhouse gas emissions. Nevertheless, its effectiveness hinges on acknowledging and addressing shortcomings exposed through real-world experience and observations. California's Cap and Trade Program is currently under review before the beginning of the next compliance period, starting in 2025. This policy brief advocates for three vital reforms that will improve the effectiveness of the program and help California meet its climate goals.

First and foremost, we recommend the introduction of an Emissions Containment Reserve (ECR) to rectify and account for the potential oversupply of compliance instruments. This measure is fundamental to ensuring a more balanced and efficient carbon market.

Second, we propose eliminating offsets as compliance instruments, potentially to be replaced by insets. This policy shift aims to yield more direct and reliable emissions reductions, thus improving the program's overall impact.

Lastly, we advocate for the gradual reduction and eventual phaseout of subsidies provided through the free allocation of allowances. This measure will allow funds to be redirected towards the development of carbon-free technologies.

While these revisions aptly address immediate concerns, it is essential to recognize an urgent issue not covered in this brief: the regulatory landscape beyond 2030. As per AB 1279, California is committed to achieving net-zero greenhouse gas emissions no later than 2045.[33] To meet these targets, it is imperative to extend effective emissions reductions policies, such as the amended Cap and Trade Program as recommended in this policy brief, beyond 2030. Furthermore, California leaders must consider accelerated targets commensurate with the rapidly worsening climate emergency.

This extension must be a top priority, as it offers a crucial price signal that reducing future carbon emissions will be economically beneficial, a critical prerequisite for investments in innovative, emerging, carbon-free technologies.

[33] https://a66.asmdc.org/press-releases/20220916-governor-newsom-signs-assemblymember-muratsuchis-ab-1279-california-climate