

Introduction and Summary

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With increasingly dire warnings from scientists and the increasing frequency and intensity of climate-fueled disasters, the sense of urgency in addressing climate change is only escalating. California has redoubled its efforts, with a commitment to reduce the state's greenhouse gas emissions by 40 percent from its 1990 levels by 2030. The emissions market covering about 75 percent of the state's total greenhouse gas emissions plays an important role in helping the state meet that goal. The market is supported by the auction price floor set at \$19.70 per ton of carbon dioxide (CO₂) emissions in 2022. The price floor is modest compared to estimates of the social cost of CO₂ emissions, but nonetheless represents a change from the historic and universal practice of issuing licenses for industrial activity for free. Although most of the emissions reductions thus far are attributable regulatory measures, the emissions cap for covered sources nonetheless boosts confidence that the economywide goal can be achieved and the emissions price improves the cost effectiveness of these emissions reductions.

Over most of the history of the emissions market allowance prices have hovered near the price floor, which increases gradually by 5 percent per year plus inflation. However, the summer of 2021 saw a sharp departure from trend with the November auction price reaching \$28.26, an increase of two-thirds over the price a year before. This increase parallels sharp increases in prices in other allowance markets including the EU and the eastern states' Regional Greenhouse Gas Initiative. One explanation for this development is growing international commitment to emissions reductions and increasing confidence those targets will be achieved. Cooperation among jurisdictions through the UNFCCC Conference of the Parties is one reason for that, and another is increasing alignment and cooperation of subnational actors. Passage of Washington state legislation in May 2021 to implement an emissions trading program along with other measures beginning in 2023 adds to that momentum and may provide opportunities for coordination with the linked California and Quebec markets.

Yet another reason for the uptick in market prices is the increasing involvement of noncompliance entities (financial investors) in the allowance market. This activity can improve the efficiency of the market through the willing investor taking of risk that helps reflect expectations of all parties about the future of the market. However, the participation of noncompliance entities also elevates the role for market oversight to ensure against manipulative behavior or and that speculation-driven price volatility does not disrupt the market or raise compliance costs.

Scoping plan process and opportunity

This year the revised Scoping Plan will be a central activity of the Air Resources Board. The focus thus far in that process has been to identify long-term technological outcomes While that is enormously valuable, we emphasize the need also to evaluate abatement potential of policies and specific measures that will help the state achieve the important emissions reduction target for 2030. We encourage the agency to develop an actionable blueprint with contingencies that can be brought forward as necessary depending on interim milestones. A more specific examination of pathways to achieve the 2030 target also helps illuminate the issue of affordability and who bears the cost of emissions reductions and can inform anticipated improvements in air quality that we expect to accompany emissions reductions. This

effort should give elevated attention to outcomes that prioritize environmental improvements in historically disadvantaged and environmentally overburdened communities

Third compliance period outcomes

The third compliance period (2018-2020) resulted in 100 percent compliance under the cap-and-trade regulation, indicating that the market mechanism is running smoothly. The noteworthy outcome is the substantial allowance reserve (bank) held in private accounts at the end of 2020, totaling 321 million tons, equal to more than the emissions reductions that are expected over the entire decade. An additional supply of allowances totaling 274 million tons resides in public accounts that may enter the market depending on auction prices. One factor contributing to this pent-up supply may be precautionary saving in anticipation of the decreasing emissions cap, another is the role of companion policies intended to reduce emissions at sources covered by the cap-and-trade program, and another is the decline in economic activity associated with the pandemic. Nonetheless, this number of allowances in private and public accounts casts uncertainty over the state's ability to hit its 2030 emissions goal. Clearly it represents an opportunity for the Air Resources Board to take stock of the supply and expected demand of allowances and consider adjustments to allowance supply going forward.

Market reform

Adjustments to allowance supply have been made previously in response to legislative direction or to implement the goals of AB32. Previous IEMAC reports have identified additional options for potential adjustments to the market if the allowance supply and demand move out of balance undermining state goals. In this year's report, we outline the options with greater specificity. When evaluating additional market reforms, we hold a preference for rule-based (automatic) measures based on criteria identified ex ante. One workable approach would adjust the allowance supply in response to auction outcomes, effectively enhancing the price floor by adding an additional emissions containment price step, as exists or is intended in the other North American emissions trading programs. We also point to the impact that program reform could have on revenues to the Greenhouse Gas Reduction Fund, which provides an important element of the state's ability to address environmental justice concerns, and we describe steps that could maintain or increase revenues to the Fund if other program reforms were implemented.

Offset reforms

Offsets constitute an important source of supply in the market, with forest offsets constituting most certified offsets to date. These offsets provide incentives for emission mitigation measures that otherwise would not be covered under the emissions market, and they play a role in managing costs for compliance entities. At the same time, the quality and permanence of forest offsets remain important questions that continue to be debated and examined in the academic literature. This report does not provide the platform for resolving those debates, but the compilation of evidence and concern invites consideration of potential reforms that may enhance the contribution of emissions reductions outside the market, including from natural and working lands. Potential reforms that are discussed in this report include ex post assessment of allowance certifications with true ups achieved through allowance cancellations under the emissions cap when necessary. In addition, we propose that offsets could be counted underneath the cap, meaning that the issuance of new allowances would be reduced when offsets are certified. The California offsets program provides a model internationally, as other jurisdictions also look for ways to develop institutions and technologies that can mitigate non-fossil fuel

related emissions, and so its success and its continued evolution plays an important role not only in the state but more broadly. One of the most readily available ways to continue this drive to innovate would be to supplement or replace the offsets program with public expenditures from the GGRF that are aimed at beneficial multi-attribute outcomes addressing emissions mitigation, ecological sustainability, and environmental justice in a coordinated manner.

Leakage

The introduction of a carbon price and other greenhouse gas regulations in California could provide incentives for economic activity and associated emissions to shift to other jurisdictions that regulate emissions less stringently – or not at all. This process known as leakage remains an important concern. Several measures are in place to mitigate leakage in the California market. Recent research assesses the effectiveness of these measures. In the electricity sector, researchers document patterns of greenhouse gas emissions across the western market that are consistent with some degree of resource shuffling. We recommend the Air Resources Board should be fully engaged with other state agencies in the planning for the expansion of the energy imbalance market to a day ahead market. We suggest the Board could expand its practice of conducting ex post assessments of leakage and cancel allowance accordingly when leakage is evident. Analysis of emissions leakage associated with industrial activity is more limited. Nonetheless, the concerns of firms and labor are deeply held. The output-based allocation of allowances for industry is designed to foreclose the incentive for leakage. Under the current allocation design, the possibility of overly generous allocation is meaningful because the allocations for industry are based on old data and assumptions about prices in the allowance market. Because free allocations to industry have the opportunity cost of reduced revenue to the GGRF, the data and assumptions underpinning free allocation should be revisited by ARB.

In conclusion, the market has performed well in achieving 100 percent compliance, but the state can ask more of the emissions market. It can play a greater role in driving cost effective outcomes and enabling greater economy wide emissions reductions. This year provides an opportunity as part of the Scoping Plan process for the Air Resources Board to further illuminate expectations for the market, and thereby help set course for the continuing decarbonization of California.