

Allowance Banking

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- **Summary:** Public program data indicate that private market participants have banked about 321 million allowances from the Western Climate Initiative cap-and-trade program's first three compliance periods (2013–2020) to its post-2020 phase (2021–2030). Observed allowance banking is consistent with projections from analysts who expressed concern about the stringency of program caps, and directly related to the use of nearly 159 million carbon offsets for compliance purposes. It is also larger than the total reductions CARB projected the cap-and-trade program would deliver over the coming decade in its 2017 Scoping Plan. Although a complete analysis of allowance banking outcomes is beyond the scope of this chapter, as we do not make any projections about the demand side of the market, these findings indicate a need for policymakers to evaluate whether current program caps are consistent with California's 2030 emissions limit.

At its core, a cap-and-trade program requires a group of covered emitters to periodically surrender compliance instruments — allowances and carbon offsets, each worth 1 tCO₂e — equal to their own emissions. As the supply of compliance instruments declines over time, so too must pollution. However, California's cap-and-trade program allows market participants to save (or "bank") allowances for future use. When allowance supplies in one compliance period exceed covered emissions, program participants can bank them to emit more in future compliance periods.

The main greenhouse gas, carbon dioxide, is known as a "stock" pollutant. For stock pollutants, what matters most is the cumulative total of emissions, not the rate of emissions at a particular point in time. When a cumulative emissions cap is defined and fixed over a multi-year timeframe, as is done in California's cap-and-trade program, then the allocation of an emissions budget over time does not significantly affect climate outcomes. Some flexibility is warranted, as affording regulated entities the ability to shift a cumulative budget of emissions across time via allowance banking can reduce the cost of meeting an overall emissions cap.

One challenge with this approach is that policymakers must define the overall cap at the outset of the program with only limited information about many key factors that determine expected emissions and abatement costs, such as macroeconomic conditions and technological change (Borenstein et al. 2019; Wara 2015). A second problem arises when designing cumulative program caps to support annual emissions targets, such as California's 2030 statewide

emissions limit (IEMAC 2020, Chapter 5). Striking the right balance between climate ambition and abatement cost can be challenging. If *ex-ante* assumptions that informed the allowance budgeting decision turn out to be incorrect, policy reforms could be warranted.

The IEMAC has previously addressed questions about allowance banking and “overallocation” pursuant to Assembly Bill 398 (IEMAC 2018, Chapter 6; IEMAC 2019, Chapter 4). Legislators have also asked CARB and the IEMAC to develop “banking metrics” to track the evolution of the program’s supply-demand balance (IEMAC 2019, Appendices A and B). CARB Board Resolution 18-51 provided direction to staff to prepare a report describing allowance banking outcomes at the end of the cap-and-trade program’s third compliance period (2018–2020) (CARB 2018a, p. 11). To our knowledge CARB has not yet indicated its plans with respect to adopting any potential banking metrics. Meanwhile, the IEMAC illustrated how public reporting data could be used to construct banking metrics (IEMAC 2019, Appendix C) via a methodology that was subsequently peer-reviewed (Cullenward et al. 2019).

Recent compliance data provide an important opportunity to observe market outcomes and use this information to assess the stringency of current program regulations. Following the end of three-year compliance periods, covered emitters in California’s and Québec’s linked cap-and-trade programs are required to surrender compliance instruments equal to their historical emissions. In November 2021, both jurisdictions held compliance events for emissions from calendar years 2018 through 2020. After this compliance event — and a November 2021 quarterly auction, at which previously unsold vintage 2019 and 2020 allowances were sold to private buyers — CARB published its Q4 2021 Compliance Instrument Report, which measures market-wide compliance instrument holdings as of January 5, 2022 (CARB 2022). As a result of the timing of these events, the Q4 2021 Compliance Instrument Report effectively reports the number of allowances banked into the cap-and-trade program’s post-2020 market period (IEMAC 2019, Appendix C at Table 3).

- **Finding #1:** Public program data indicate that private market participants in the Western Climate Initiative (WCI) banked about 321 million allowances from the market’s first three compliance periods (2013–2020) into its post-2020 phase (2021–2030).¹ Observed allowance banking significantly exceeds the scenario considered by CARB in its 2018 cap-and-trade rulemaking process and is broadly consistent with projections from analysts who raised concerns about allowance overallocation.

¹ This number is calculated by summing entity account holdings (columns B, C, and D) of vintage 2013 through 2020 allowances (rows 14-21) and non-vintage allowances (rows 32-33) in CARB (2022).

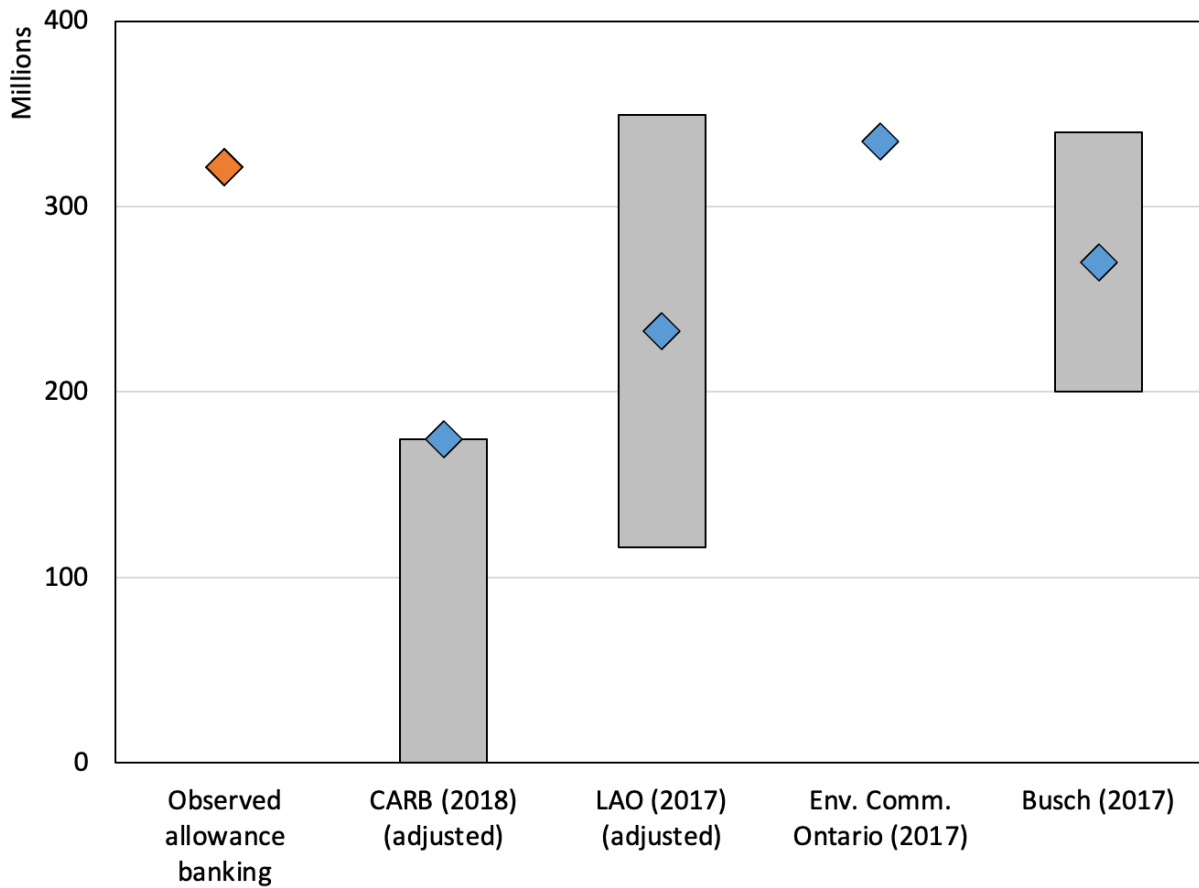
Banking outcomes can be compared against projections made by various parties during the implementation of Assembly Bill 398. In a 2018 rulemaking process, CARB analyzed a scenario in which 150 million California allowances were banked into the market’s post-2020 period (CARB 2018b). In contrast, a series of reports from the Legislative Analyst’s Office (LAO 2017), climate policy analyst Dr. Chris Busch (Busch 2017), and the Environmental Commissioner of Ontario (ECO 2017) generally projected higher banking outcomes and raised concerns about the extent of projected allowance banking on the program’s ability to reduce post-2020 emissions in line with statutory targets (see Table 1 and Figure 1). Projections are inherently uncertain; nevertheless, new compliance data provide CARB with an opportunity to review its methodology in the context of current market information.

Table 1: Comparing allowance banking scenarios

Source	California allowances banked	Total WCI allowances banked
Observed banking (this chapter)	N/A	321 million
CARB (2018b) ²	150 million	175 million
LAO (2017) ²	200 million (± 100 million)	233 million (± 116 million)
ECO (2017)	N/A	335 million
Busch (2017)	N/A	270 million (± 70 million)

² CARB and the LAO projected the number of California allowances banked into the market’s post-2020 period, while others projected the total number of allowances irrespective of jurisdictional origin. Because public reporting data does not provide a jurisdictional breakdown by allowance origin (see IEMAC 2019, Appendices A and B), it is not possible to report observed banking of California allowances in isolation. To compare numbers on an apples-to-apples basis, we adjust projections of California-only allowance banking by 1.164, which is the ratio of (1) the sum of the 2020 allowance budgets for California (334,200,000 allowances) and Québec (54,740,000 allowances) to (2) the 2020 allowance budget for California (334,200,000 allowances). For California budgets, see Cal. Code Regs. title § 95841, Table 6-2; for Québec budgets, see Order in Council 1126-2017 (22 Nov. 2017).

Figure 1: Comparing allowance banking scenarios ³



- Finding #2:** Just under 159 million offset credits were surrendered to regulators in California and Québec in the first three compliance periods (2013–2020), contributing directly to the total private bank of 321 million allowances. Because carbon offsets enable higher statewide emissions, their historical and future use increase the extent of in-state mitigation necessary to achieve California’s 2030 statewide emissions limit.

The use of carbon offsets has important effects on the extent of allowance banking as well as the location of emissions and emission reductions. Both factors increase the amount of in-state mitigation required to meet California’s climate targets.

The number of allowances banked depends in part on the availability and price of carbon offsets because covered emitters can choose to use offsets instead of allowances to satisfy a

³ Using WCI-wide adjustments for CARB (2017) and LAO (2017), per Table 1. CARB (2017) considered banking up to a specified number; LAO (2017) and Busch (2017) provided central estimates with symmetrical uncertainty bars; and ECO (2017) provided a point estimate.

limited portion of their cap-and-trade compliance obligations. The more offsets there are and the cheaper they are relative to allowances, the more offsets will be used; and the more offsets are used, the larger the bank of allowances will be. Compliance data from California and Québec indicate that just under 159 million offsets were surrendered to regulators in the first three compliance periods (2013–2020) (see [cross-reference offsets chapter](#)), or about half the size of the private allowance bank.

Because offset credit use substitutes for allowance surrenders, offsets enabled covered emitters to bank more allowances into the program’s post-2020 period. Their use also increases the need for in-state mitigation efforts because offsets’ climate benefits generally do not contribute to a reduction in “statewide emissions” for the purposes of California’s 2020 and 2030 climate targets.⁴ Most offset projects claim climate benefits in sectors that are currently not part of the state’s greenhouse gas inventory (such as forests) or are located outside of California (such as a forest offset project in Alaska). As a result, historical and future offsets use increase the need for additional in-state climate mitigation efforts.

- **Finding #3:** The extent of observed private banking is larger than the contribution CARB projected would be needed from the cap-and-trade program over the period 2021–2030, raising questions about the ability of the program to act as a “backstop” policy as currently designed.

Observed banking of 321 million allowances can be compared to earlier projections about the expected contribution of the cap-and-trade program toward California’s 2030 statutory emissions limit. In its 2017 Scoping Plan, CARB projected that the cap-and-trade program would need to reduce a cumulative 236 million tCO₂e over the period 2021–2030 (CARB 2017, p. 26).

Because that projection considered only the contribution toward California’s emission reductions, whereas the observed banking outcome reflects WCI-wide allowance holdings, an additional analytical step is required. If we assume California and Québec intend their linked cap-and-trade programs to play roughly similar roles in the coming decade, then the linked cap-and-trade programs would need to deliver something on the order of 275 million tCO₂e in reductions under the assumptions of CARB’s core 2017 Scoping Plan Scenario⁵ — still less than the number of allowances banked from the market’s first three compliance periods.

⁴ Health & Safety Code §§ 38550, 38566 (defining California’s 2020 and 2030 greenhouse gas emission limits in terms of “statewide emissions”).

⁵ Using a 2030 cap-adjustment ratio of 1.220, based on the 2030 California cap (200,500,000 allowances) and 2030 Québec cap (44,140,000 allowances). See footnote 2.

We emphasize how important careful policy analysis is to the consideration of any potential reforms to cap-and-trade program designs. Projecting future emissions in the face of policy, macroeconomic, and technological uncertainty is challenging to say the least. Nevertheless, new public data following the November 2021 compliance event provides an opportunity to clearly assess the supply side of the market. These data show that private market participants banked 321 million allowances that originate from the market’s pre-2021 period. Current regulations in California and Québec indicate that an additional approximately 2,996 million allowances will be made available through 2030 via free allocation and regular quarterly auctions;⁶ and approximately 274 million more allowances are available in various government reserve and cost containment accounts (CARB 2022).

As we have observed in previous reports, the cap-and-trade program covers about 75% of California’s statewide emissions and, due to allowance banking, is best understood as a *cumulative* emission reduction policy for the covered subset of statewide emissions. As a result, translating expected outcomes in the cap-and-trade program to a contribution toward an *annual statewide* emissions limit in 2030 requires careful analysis and important policy decisions (IEMAC 2020, Chapter 5).

We have not provided the necessary analysis here to address expected future emissions (i.e., the demand side of the market) nor the expected effects of the program on statewide emissions in 2030, which we believe is best conducted in the context of the ongoing 2022 Scoping Plan process ([cross-reference Scoping Plan chapter](#)). Nevertheless, the allowance banking observed to date provides substantial evidence indicating the need for a comprehensive assessment of program caps in relation to California’s 2030 emissions limit.

⁶ Based on the 2021 through 2030 program budgets for California and Québec, excluding reserve allowances (for sources, see footnote 2), excluding the 13.2 million allowance cap adjustment made jointly by California and Québec (as described in CARB (2022)). Additional allowance retirements, including to address unsatisfied compliance obligations discharged in bankruptcy as well as to address emissions leakage in the CAISO Energy Imbalance Market, are also part of the current market design but not accounted for here.

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