Issue Summary 3: The importance of banking for early emissions reductions and a well-functioning program

California's Cap-and-Trade Program, while primarily designed to reduce greenhouse gas (GHG) emissions, can also influence emissions of local air co-pollutants such as particulate matter ($PM_{2.5}$), nitrogen oxides (NO_x), and air toxics. Over the years, there have been concerns that cap-and-trade could increase local air emissions. Results from two recent empirical studies, each using different dispersion models and counterfactual approaches, show that the cap-and-trade program has reduced disparities in local air pollution.

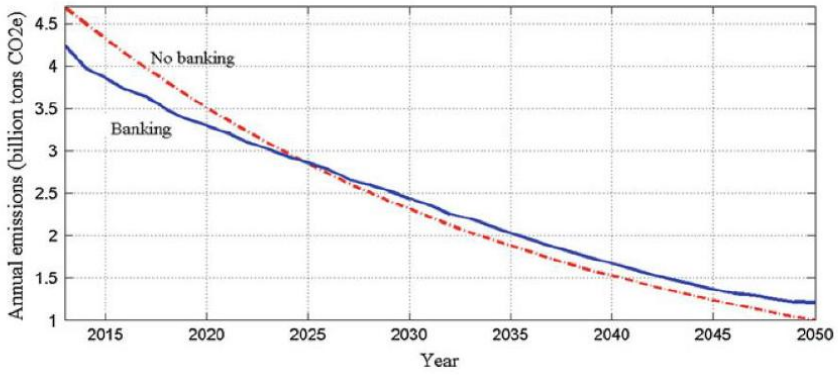
Banking is a central feature of cap-and-trade programs, including the California cap-and-trade program. Per Dr. Dallas Burtraw, former Co-Chair of California's Independent Emissions Market Advisory Committee (IEMAC), "every successful program has enabled emissions banking; and indeed the exception proves the rule." (Legal Planet, 2017).

Existing banking rules under the California cap-and-trade program serve a number of purposes, including:

- ✓ Reducing compliance costs and mitigate concerns about price volatility
- ✓ Creating compliance flexibility
- ✓ Incentivizing early greenhouse gas (GHG) emission reductions
- ✓ Encouraging a long-term commitment from market participants

Achieving early GHG emissions reductions is a particularly important for mitigating long term climate change impacts. Leard (2013) argues that allowance banking improves economic welfare by leading to lower emissions in the short run. Compared to a cap-and-trade program without banking, cumulative reductions over time remain unchanged, but more reductions occur earlier on, leading to an "environmental dividend" as illustrated below.

Emissions With and Without Allowance Banking Under a National C&T Program
Source: Leard (2013)



Restricting banking has been shown to result in significant price volatility and underperformance in other programs. The impact of restricting banking has been studied in different market contexts, including the following real-world examples:

Example 1: In 1994, the South Coast Air Quality Management District launched the Regional Clean Air Incentives Market (RECLAIM), the first large-scale urban regional cap-and-trade program for NOx. The program did not allow covered sources to bank allowances for future use; rather, allowances had to be used in the year that they were allocated. That market faced price spikes (from $1 to $60/allowance in the span of one year) as a result of a tightening cap and demand that outpaced supply. As observed by Burtraw et al. (2009) "Had banking been allowed, sources with low-cost abatement options would have had an incentive to adopt them early and retain the allowances for future periods. Banking gives sources a greater incentive to think about their long-term position in the market." (Burtraw, Dallas and Sara Jo Szambelan. 2009. "U.S. Emissions Trading Markets for SO2 and NOx", Resources for the Future)

Example 2: EU ETS prices oscillated in the first pilot period (2005-2007) in part due to certain restrictions on banking. Specifically, there was a drop in allowance prices in response to the inability to bank allowances for use in the second period (2008-2012). Ellerman et. al (2008) characterize this inability to bank between periods as "one of the major design flaws of the trial period," further observing that banking helps dampen price volatility. (Ellerman, Denny and Paul Joskow. 2008. "The European Union's Emissions Trading System in Perspective." Massachusetts Institute of Technology)

Example 3: The South Korea emissions trading system has experienced substantial volatility from near $0 to over $30 primarily due to low liquidity caused by a combination of restrictions on allowance banking and limitations on voluntary participation.