Issue Summary 2: Cap-and-Trade has led to reductions in local air pollution in disadvantaged communities

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.

Study 1: In *"Do environmental markets cause environmental injustice? Evidence from California's carbon market"* (2023), Danae Hernandez-Cortes and Kyle Meng compared emissions at a subset of facilities covered by cap-and-trade to emissions from similar types of facilities not covered by cap-and-trade, then used a National Oceanic Atmosphere Administration dispersion model to determine how criteria air pollution from the cap-and-trade facility disperses spatially across California. The study found that "during 2012–2017, the cap-and-trade program caused reductions annually at a rate of 9%, 5%, 4%, and 3% for GHG, PM2.5, PM10, and NOx, respectively, for the average sample regulated facility". It is worth nothing that Manuel Pastor and Michael Ash revised the Hernandez-Cortes and Meng study in "*Cap and trade: Understanding the research and remedies"* (2024) by, among other things, using an alternative data set, and found that the cap-and-trade program reduced emissions annually at a rate of 3.2%, 2.3%, 0.7% and 0% for GHG, PM2.5, PM10, and NOx, respectively, concluding that "the estimated changes are smaller and close to what we might have expected".

Study 2: In "*California's GHG Cap-and-Trade Program and the Equity of Air Toxic Releases*" (2024), Dr. Glenn Sheriff employed various empirical methods and the EPA's Risk-Screening Environmental Indicators (RSEI) model to evaluate the impact of cap-and-trade on minority communities and concluded that "minority communities experienced a relative reduction in cumulative exposure from [air toxics]" as a result of the cap-and-trade program. Specifically, the study found that there was no evidence "to support the hypothesis that the GHG cap and trade program increased relative releases for facilities that are upwind of more people of color," that "cumulative air toxic exposure to POC communities actually had a larger percent decline from GHG-covered facilities relative to other sources," and that "EJ concern with trading may be misplaced, however, since the POC exposure distribution with the GHG cap and trade program is preferable to the counterfactual distribution without it." It is worth noting that Manuel Pastor concluded that this study's methods "while complex, are credible." (18 July 2024 EJAC meeting).

The findings above appear to be consistent with hypotheses that predated the causal studies, such as a Cushing et al. (2016) paper that posited, “as regulated industries adapt to future reductions in the emissions caps, California is likely to see more reductions in localized greenhouse gas emissions and co-pollutant emissions.” Ultimately, while the results observed in the recent causal studies are not necessarily guaranteed in the future, the cap-and-trade program's progressively lower caps could continue to drive reductions in local air pollution as has occurred to date.

Indeed, these recent findings appear to be refocusing the conversation in a direction that is “not so much about absolute hotspots” arguably caused by cap-and-trade, but rather “optimal reductions [in local air emissions] and foregone air quality benefits” (Manuel Pastor, 18 July 2024 EJAC meeting) and whether cap-and-trade is positioned to deliver on those “optimal reductions” relative to other interventions, such as directing auction revenue towards air pollution reduction programs or implementing stricter criteria air pollution regulations.