

I have some questions and comments/suggestions relating to your draft chapter on Market Design. Your feedback would be appreciated, either directly or via revision of the draft.

The chapter recommends that CARB initiate a workshop to investigate the introduction of an ECR. If this is intended as a post-2030 measure, then I think your audience should also include the JLCCCP. Current statutory guidance in AB 398 establishes a price ceiling and two price containment points at levels below the ceiling, but there is no statutory requirement for either a price floor or an ECR. The six statutory consideration criteria for setting the price ceiling include "the auction reserve price," but there are no statutory criteria for setting the floor. The IEMAC's recommendation on the ECR has relevance to what form C&T reauthorization might take.

The draft report briefly discusses the alternative of raising the price floor, but the report does not recommend that CARB investigate this option. The report favors an ECR over raising the price floor for the following stated reason: "An advantage of introducing an additional price step as an Emissions Containment Reserve is that it fills out a price-responsive allowance supply schedule which preserves and enhances the role of the market in price discovery over a wider range of outcomes (Roberts and Spence 1976; Burtraw et al. 2022)." I don't really understand what that means, and the explanation will probably not be meaningful to CARB/legislative staff. The cited Burtraw reference makes no mention of "price discovery". CARB and legislative staff cannot be expected to read and understand a highly technical, 30-page journal publication to decipher the policy rationale behind the IEMAC's recommendation. The report should provide a concise, self-contained explanation, written for lay people, of why the IEMAC does not recommend raising the price floor. It should not be presumed that policy makers will adopt the IEMAC's recommendations based solely on their trust in the IEMAC's judgement, without understanding the policy rationale behind the committee's recommendations.

I found an RFF report under a title similar to the cited Burtraw reference ("Quantities with Prices: Price-Responsive Allowance Supply in Environmental Markets"), by the same authors, which is not behind a paywall, and which seems to provide some insight into the ECR recommendation. (https://media.rff.org/documents/RFF_WP_20-17_Burtraw.pdf) As I understand it, the allowance supply step function illustrated in the IEMAC's draft Market Design chapter (Figure 1) is intended to coarsely approximate a monotonically increasing marginal damages function as illustrated in the RFF report (Figure 2). As explained in Theorem 1, "... the available price and quantity pairs are determined by the auctioneer's (policymaker's) best estimate of the marginal damage function." A higher price floor (rather than an ECR step) would be analogous to the carbon tax illustrated in the left panel of RFF Figure 2, which would incur a "deadweight loss" due to the upward-sloping Marginal Damages curve.

It appears to me that the "marginal damage function" is synonymous with the social cost of carbon (SCC), which can be an increasing function of emissions, and that the inefficiency of a carbon tax (or higher price floor) results from the mismatch between the tax rate and the SCC when the SCC is not constant.

A couple points need clarification in RFF Figure 2: The vertical axis is labeled "\$", but I think that should be "\$/ton-CO₂e". The horizontal axis is labeled "Emissions", but specifically what emissions does this represent? (Statewide emissions? Global emissions?) What is the form of the actual (real-world) "best estimate of the marginal damage function"? Does the IEMAC recommend an allowance price schedule based on the criterion of Theorem 1?: "The auction selects a price-quantity pair such that the supply of allowances equals the demand and price equals expected marginal damages at the given quantity."

CARB has partially implemented this policy in setting the price ceiling. One of the six AB-398 consideration criteria for setting the ceiling is "The full social cost associated with emitting a metric ton of greenhouse gases," and the ceiling was initially set based on the established SCC at the time. However, the EPA has recently raised its SCC estimate to about \$200/ton-CO₂, so CARB should revisit the policy basis of its price ceiling. As for the price floor, there is currently no statutory guidance for setting the price floor. The IEMAC could constructively help guide state climate policy by clearly articulating the policy rationale for a price floor and ceiling, and proposing policy decision criteria for setting the floor and ceiling as well as any intermediate price steps.

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