

Implementing AB 398: ARB’s initial post-2020 market design and “allowance pool” concepts

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AB 398 requires the California Air Resources Board (ARB) to make several important reforms to the cap-and-trade program’s post-2020 market design. For example, the statute requires ARB to implement a hard price ceiling at which unlimited compliance instruments will be offered for sale at a fixed price; establish two new price containment points at which limited quantities of allowances will be made available at a fixed price; and impose new limits on carbon offsets, to name only a few changes.

Earlier this month, ARB released its initial thinking on how to implement the post-2020 market design reforms required by AB 398 (ARB 2018a, 2018b, 2018c). As a threshold matter, it is important to observe that ARB has not yet addressed two key issues on which AB 398 requires further evaluation—potential changes to banking rules and adjustments for over-allocation (also known as oversupply). Both of these statutory provisions require ARB to consider the extent to which the current cap-and-trade program has too many allowances relative to near-term demand. So far, ARB has characterized lax market conditions as a success, not a liability.

On the whole, ARB’s proposal (summarized in Appendix 1) features high long-term price ambitions, but no serious efforts to balance long-term mitigation needs against near-term oversupply conditions.

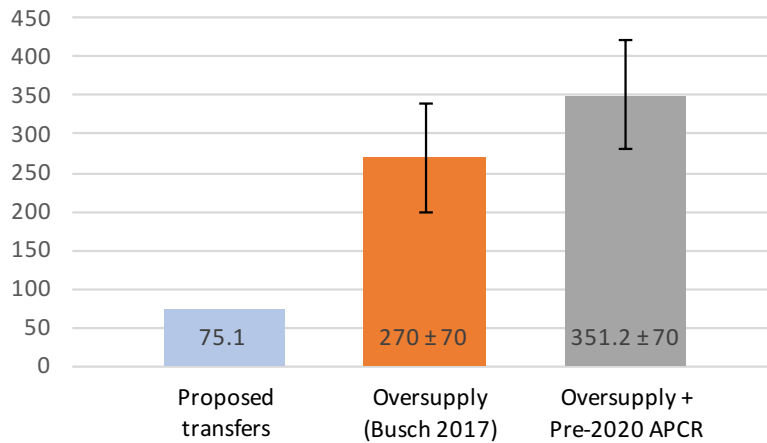
Key features of ARB’s proposal include:

- **High long-term price ambitions.** ARB has proposed setting two new price containment points no lower than \$70 per allowance in 2021 (2015 USD), and has suggested the new market price ceiling will, in 2030, be no lower than \$81.90 and no higher than \$147 per allowance (2015 USD). Pursuant to AB 398, ARB must offer unlimited additional compliance instruments for sale at the price ceiling. The ambition of the price containment point and price ceiling would allow allowance prices to rise substantially from recent levels, which remain near the

price floor (just under \$15 per allowance). Price increases significantly above the floor are likely necessary to achieve California’s ambitious 2030 climate target.

- **No serious action on oversupply.** Board staff continue to argue that the oversupply of allowances currently present in the program is a sign of the program’s success, rather than a reflection of the program’s lack of stringency (ARB 2018a: 22-24). ARB has offered no evidence to support this view. Staff also suggest that oversupply has no potentially deleterious effects, despite the findings of multiple independent studies that have identified serious environmental risks (e.g., Busch 2017, Cullenward et al. 2017, LAO 2017, Environmental Commissioner of Ontario 2018). However, the staff presentation indicates ARB has received stakeholder feedback calling for reductions in the number of allowances under the program caps and/or rules to adjust the value of banked allowances over time (ARB 2018a: 22).

Allowance pool transfers vs. market oversupply in 2020
(million allowances)



Despite disputing the risks of current market oversupply conditions, ARB’s proposed “allowance pool” transfers (ARB 2018c) would take modest action to address oversupply risks. ARB has proposed transferring up to 75.1M allowances from the post-2020 annual allowance budgets into two new price containment points. While these transfers are not equivalent to removing excess allowances from the market and therefore do not fully resolve concerns related to market oversupply, ARB’s proposed transfers would make these allowances more expensive to purchase and therefore would tend to incentivize greater GHG reductions relative to the status quo. However, the magnitude of any

potential benefits will depend on where ARB ultimately sets the price level of the two price containment points.

On the other hand, the scale of the proposed transfer (up to 75.1M allowances) represents only a small share of market oversupply projected through 2020 (270M \pm 70M allowances) (Busch 2017). These calculations do not include the excess 81.2M pre-2021 APCR allowances AB 398 requires ARB to place in two post-2020 price containment points. If market prices reach these levels, allowances in the price containment points will contribute to projected oversupply conditions (raising the total to 351.2M \pm 70M allowances).

- **No mechanism for managing a transition from low to high prices.** The likely consequence of extending the market design without adjusting for oversupply is that market prices are likely to stay low for several years, during which time the supply of allowances will exceed near-term demand and prices will likely incentivize relatively few GHG reductions from the cap-and-trade program. Eventually, declining program caps will become binding and likely lead to a transition to higher carbon prices. This presents two related problems. First, low prices in the near term may lead to regulated entities' underinvestment in GHG mitigation in advance of a market transition from low to high prices. Second, carbon prices may rise significantly and quickly once emitters consume the extra allowances in the market (i.e., as market oversupply conditions fade).
- **Tension between near-term price impacts and encouraging action to reduce climate pollution.** ARB's initial thinking on the trade-offs between program stringency and laxity indicate that the Board is particularly concerned about limiting near-term price impacts (ARB 2018a: 23). We believe there are technical reforms that could enable dynamic adjustments to program allowance budgets and/or banking rules that respond in real time to relative program laxity based on empirical metrics. Some of these interventions could improve market stringency while deferring price impacts to a later point in time. However, there is no avoiding the fundamental trade-off between price impacts and GHG emission reductions. No market design can guarantee large emission reductions at low prices. Deferring adjustments to program stringency would delay and likely reduce total GHG reductions from the cap-and-trade program.

- **No analysis of how the proposed market design will achieve the role identified for cap-and-trade in the 2017 Scoping Plan.** Finally, we note that the preliminary discussion draft of ARB’s proposed regulations does not include any analysis that substantiates the role ARB identified for cap-and-trade in its 2017 Scoping Plan. We understand that ARB may be planning to release more information in the future. In particular, it will be important for ARB to illustrate how any trade-offs it proposes with respect to cap-and-trade program stringency are likely to deliver on the reductions needed to close the gap between California’s regulatory programs and the Scoping Plan scenario.

There are no easy answers to the challenges identified above. Fundamentally, however, we believe ARB will need to manage a transition from today’s low prices to significantly higher prices in the years to come. Rather than dispute the cause of today’s low prices and avoid discussion of the need to increase program stringency to defer price increases, ARB may wish to consider how proactive market reforms could enable an earlier and more gradual carbon price trajectory that contributes to the state’s ambitious climate targets. With the goal of informing a constructive discussion, we offer two conceptual thoughts:

- **Price containment point prices interact with market oversupply concerns.** ARB’s proposal to set the two post-2020 price containment points at relatively high price levels (starting in 2021 at no lower than \$70 in 2015 USD) has important advantages and disadvantages.

On the one hand, this approach would largely avoid exacerbating market oversupply conditions by making a sizeable supply of excess allowances (at least 81.2M) available only at high prices (no less than \$70 per allowance)—almost five times higher than today’s costs (about \$15 per allowance). So long as the market price remains below the price containment points, these excess allowances won’t contribute to market oversupply. If market prices reach these levels, however, the allowances sold from the price containment points would enable higher GHG emissions and contribute to market oversupply. For the same reasons, if ARB were to set the price containment points at low price levels, the excess allowances in these accounts would likely enter circulation and exacerbate the market’s oversupply problem.

ARB’s proposal also has an important downside. Although high price containment points avoid worsening market oversupply—so long as

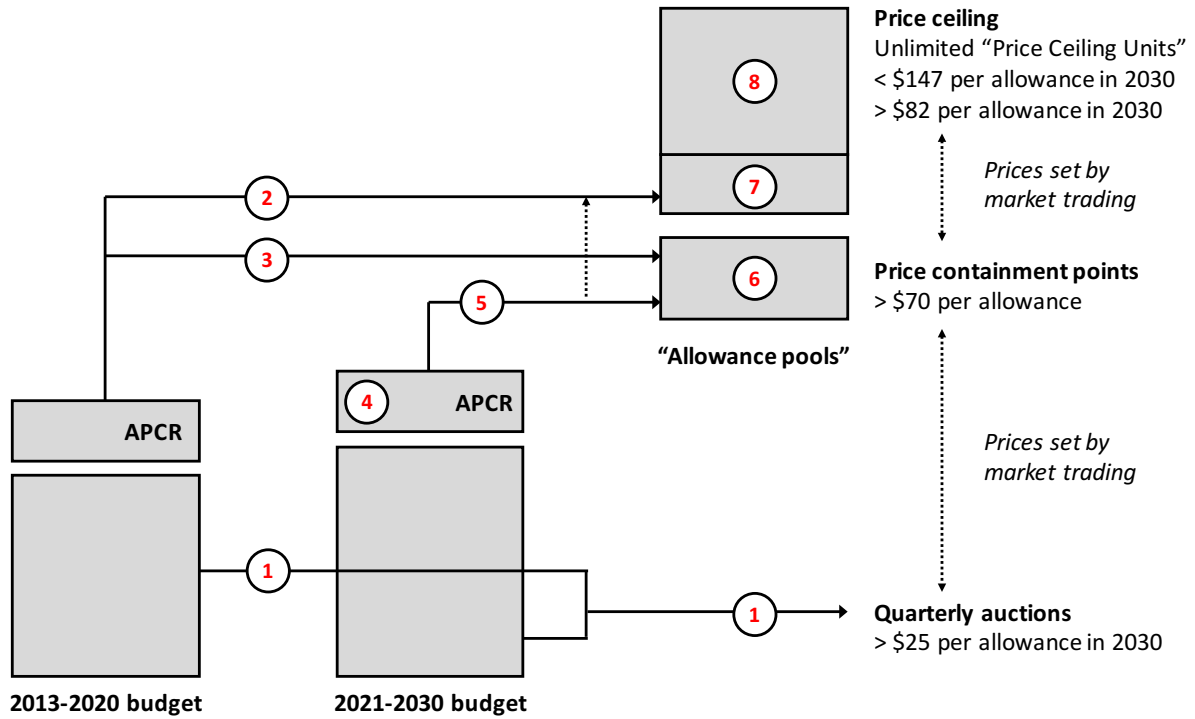
prices stay below the containment points—the Board’s proposal does not mitigate potential carbon price volatility in between current prices (\$15) and the proposed price containment points (starting in 2021 at no lower than \$70 in 2015 USD). Thus, ARB’s proposed market design creates the potential for a disruptive market transition in the early 2020s (as oversupply conditions fade) without any guarantee of significant GHG emission reductions prior to that time (due to low prices from the near-term oversupply conditions).

- **An alternative paradigm for managing the transition to higher carbon prices?** To date, the cap-and-trade program has experienced low prices as a result of oversupply conditions, which themselves are attributable to the economic recession, the success of California’s other clean energy policies, and reductions in the cost of low-carbon technologies (Cullenward et al., 2017). In this paradigm, carbon prices remain low so long as the supply of allowances exceeds near-term demand, but there are no mechanisms in the current market design to ensure an orderly transition from low to high prices once oversupply conditions are gone. The fundamental challenge is twofold. First, today’s low prices bear little relationship to the costs ARB projects for the kinds of efforts needed to achieve California’s ambitious 2030 climate target (ARB 2017a: 46). Second, tomorrow’s carbon prices could rise too quickly as oversupply conditions fade in the early 2020s.

To escape the constraints the current paradigm imposes, ARB may wish to consider a different approach to managing program costs. Rather than rely on allowance oversupply to keep costs low, ARB could evaluate other approaches. One option would be to re-orient its market design to carefully reduce allowance oversupply while containing price trajectories via lower price containment points and a graduated price ceiling level that starts at a lower initial price and increases more rapidly over time. This would require (1) a thoughtful study to evaluate market oversupply conditions and carefully address them via adjusting allowance budgets and/or banking rules (see Appendix 2), as well as (2) the establishment of price ceiling and/or price containment points at lower prices to contain costs within the Board’s discretionary authority under AB 398. Collectively, these reforms would better enable the Board to balance the trade-offs between program stringency and costs, relying on explicit controls to manage costs and increasing the transparency of the program’s implementation.

Appendix 1: ARB’s proposed post-2020 market design

ARB has proposed modifying the market design by shifting several quantities of allowances from the pre- and post-2020 allowance budgets into several so-called “allowance pools” (ARB 2018c). The summary figure below indicates how various quantities of allowances would be transferred from annual allowance budgets into standard quarterly auctions, two new price containment points, and a new set of accounts at the post-2020 market price ceiling:



1. Allowance banking and auctions
2. 1/3 of pre-2020 APCR sent to price ceiling
3. 2/3 of pre-2020 APCR allowances sent to price containment points
4. Post-2020 budget carve-outs
5. Post-2020 budget carve-outs sent to two price containment points and/or ceiling
6. Two price containment points
7. Price ceiling account
8. Unlimited, non-tradable “Price Ceiling Units”

Notes: All prices are given in units of 2015 USD, consistent with ARB’s new documents and the 2017 Scoping Plan. Figure not drawn to scale.

1. Allowance banking and auctions

Under current and proposed market regulations, regulated entities and third-party buyers can bank allowances for use in any future program years, subject only to corporate association-level holding limits (in 2018, up to 15.7M of current and each future year allowance vintage) (ARB 2017b). Allowances from the pre-2020 program budgets that are purchased at auction or freely allocated can be banked for post-2020 compliance purposes. Similarly, allowances from the post-2020 budgets that are purchased at auction or freely allocated can be banked for post-2020 compliance purposes. ARB has not proposed modifying the auction price floor, citing concerns about harmonizing WCI market design in Ontario and Québec; at the current schedule, the auction price floor would be \$25.16 per allowance in 2030 (2015 USD).

2. 1/3 of pre-2020 APCR sent to price ceiling

AB 398 requires ARB to create a new price ceiling at which unlimited new compliance instruments will be made available for purchase (see item #8, below). AB 398 also requires ARB to transfer 1/3 of the allowances in the pre-2020 Allowance Price Containment Reserve (APCR) at the end of 2017 into a separate price ceiling account (see item #7, below) that would be offered for sale before ARB issues unlimited new Price Ceiling Units (see item #8, below; these former APCR allowances come from the original program allowance budgets). At the end of 2017, there were 121.8M allowances in the APCR; thus, 1/3 of these allowances (40.6M) will be transferred into the post-2020 price ceiling account.

3. 2/3 of pre-2020 APCR sent to two price containment points

AB 398 requires ARB to send the remaining 2/3 of the allowances in the APCR at the end of 2020 to two new “price containment points” (see item #6, below). At the end of 2017, there were 121.8M allowances in the APCR; thus, 2/3 of these allowances (81.2M) will be transferred into the two price containment points (40.6M each).

4. Post-2020 budget carve-outs

ARB finalized post-2020 market regulations in 2017, after the passage of AB 398 but before making an effort to comply with the statute’s requirements. These regulations were approved by the Office of Administrative Law and therefore constitute current law. These regulations retained the

structure of the pre-2020 APCR but did not include a price ceiling, which is inconsistent with AB 398 and therefore requires reform. Accordingly, ARB is taking current regulations as the starting point for reforms and proposing changes relative to this baseline. In the 2017 regulations, ARB set aside 52.4M allowances for the APCR (see § 95871, Table 8-2).

ARB has now proposed increasing the size of the post-2020 APCR set-aside, reflecting the logic the Board employed in the pre-2020 market design period. In 2010, ARB had considered reserving 4% of the 2013-2020 allowance budgets for the APCR, mirroring the then-proposed 4% limit on offsets use. When ARB ultimately adopted an offsets limit of 8%, the Board also increased the APCR set-aside to 8%. Consistent with that approach, ARB now proposes to increase the post-2020 APCR set-aside by 2% of the allowance budgets for the period 2026-2030, reflecting the 6% offsets limit that applies in this period (6% being 2% higher than 4%). This would result in an addition 22.7M post-2020 allowances being transferred to the new price containment points (distributed equally from all post-2020 annual budgets, rather than from 2026-2030 budgets only).

Thus, ARB has proposed increasing the total post-2020 budget carve-out from 52.4M allowances (as specified in current regulations) by an additional 22.7M allowances, for a total of 75.1M allowances.

5. Post-2020 budget carve-outs to two price containment points and/or price ceiling

ARB is considering sending all of the allowances set aside for the APCR from the post-2020 allowance budgets (including proposed additions, see items #3 and #4, above) to one or both of the two new price containment points (see item #6, below) and/or the price ceiling account (see item #7, below). Including proposed additions to the post-2020 APCR above what is currently in ARB's official market regulations, the total number of allowances in question is 75.1M (see item #4, above).

6. Two price containment points

AB 398 delegates broad authority to ARB to design two new price containment points, which are essentially pools of allowances made available for purchase at specified prices.

ARB has proposed that the lower of these two price containment points be no lower than \$70 in 2021 (2015 USD). Under ARB's proposal, allowances

in the two price containment points would be made available for sale at an annual offering, as well as on a quarterly basis if the previous quarter's auction clears at or above 60% of the lower of the two price containment point reserve prices.

7. Price ceiling account

AB 398 delegates broad authority to ARB to design a new market price ceiling. Pursuant to statute, ARB must offer unlimited compliance instruments for sale at the price ceiling. The Board has proposed setting the 2030 price ceiling price no lower than \$81.90 per allowance and no higher than \$147 per allowance (both units in 2015 USD).

ARB can also offer other compliance instruments for sale at the price ceiling level. For example, AB 398 requires that 1/3 of the allowances in the APCR at the end of 2017 be transferred to the price ceiling account (40.6M, see item #2 above). In addition, under current regulations, allowances that remain unsold at auction after 24 months are automatically transferred to the APCR. AB 398 requires that ARB to transfer any allowances remaining in the APCR at the end of 2020 into the price ceiling.

Because current market regulations restrict the rate at which previously unsold allowances can be re-introduced, at least some of the previously unsold allowances will remain unsold for 24 months, be transferred into the APCR, and eventually removed to the post-2020 price ceiling account. Even if all allowances re-introduced at auction sell, approximately 40M will ultimately be transferred to the post-2020 price ceiling (Busch 2017).

8. Unlimited, non-tradable "Price Ceiling Units"

ARB has proposed distinguishing the unlimited compliance instruments it must offer at the price ceiling from "normal" allowances that are part of the program's overall allowance budget. ARB proposes calling the new unlimited instruments "Price Ceiling Units" and making them subject to different rules. The Price Ceiling Units would be made available for purchase at an annual event that is separate from the quarterly auctions. The new Price Ceiling Units would not be tradable, but would instead be available for purchase in a manner that allows regulated entities to close any gaps in their annual compliance obligations in a timely manner.

AB 398 requires the Board to spend all revenue raised from sales of additional compliance instruments at the price ceiling on additional reductions

of greenhouse gases—an environmental integrity provision (see Cullenward et al. 2018). Under ARB’s proposal, only these Price Ceiling Units would be subject to AB 398’s environmental integrity provision. All other, “normal” allowances offered for sale at the price ceiling (see item #7, above) would not be subject to this requirement.

Appendix 2: Overallocation / oversupply study needs

AB 398 requires ARB to evaluate and address as appropriate “concerns related to [allowance] overallocation” (Cal. Health & Safety Code § 38562(c)(2)(D)). In order to properly evaluate market overallocation / oversupply, a study would need to consider several important factors:

- The gap between pre-2020 allowance budgets and pre-2020 GHG emissions, both in terms of observed (through 2016) and projected (2017-2020) emissions;
- The role carbon pricing may have played in the difference between allowance budgets and actual emissions, including anticipatory mitigation undertaken by covered entities;
- An estimate of the extent to which extra allowances in the pre-2020 allowance budgets are being banked in private and government accounts, and a mechanism for tracking banking behavior on an ongoing basis;
- The supply of carbon offset credits through 2020 and their impact on the size of allowance banking;
- The balance of compliance instrument supply and demand across linked programs in California, Québec, and Ontario;
- The extent to which the delayed re-introduction of previously unsold allowances from undersubscribed auctions will result in the de facto retirement of some of these allowances; and,
- The carry-forward of pre-2020 APCR allowances into post-2020 price containment points.

We believe the existing literature provides a helpful start to answering many of these issues and are confident that further study could produce a thoroughly vetted analysis with broad stakeholder input to inform ARB’s planning. We urge ARB to take seriously the need to design a cap-and-trade program that addresses the program’s current challenges and to conduct a public estimate of market oversupply conditions to inform the Board’s options.

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About Near Zero

Near Zero is a non-profit environmental research organization based at the Carnegie Institution for Science on the Stanford University campus. Near Zero provides credible, impartial, and actionable assessment with the goal of cutting greenhouse gas emissions to near zero. This research note is for informational purposes only and does not constitute investment advice.

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