



July 5, 2018

Dear ARB Board Members and staff,

Thank you for the opportunity to comment on the materials provided for ARB's June 2018 Workshop on the implementation of AB 398's cap-and-trade program reforms.<sup>1</sup> Our comments today focus on AB 398's requirement that the Board "evaluate and address concerns related to overallocation."<sup>2</sup>

Before we discuss this issue, however, we first want to recognize that the workshop materials provide significant new information on two critical issues related to carbon offsets. First, the presentation and preliminary discussion draft indicate staff now interpret AB 398's definition of "direct environmental benefits" as environmental benefits that go beyond project-level greenhouse gas reductions.<sup>3</sup> Second, staff clarify that they interpret AB 398's total limits on offsets as applying to the calendar year in which emissions take place, rather than the year in which compliance obligations for those emissions are calculated.<sup>4</sup> As we had earlier expressed concern that other interpretations would be inconsistent with legislative intent,<sup>5</sup> we

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<sup>1</sup> ARB, Workshop to Continue Informal Discussion on Potential Amendments to the Cap-and-Trade Regulation, Staff Presentation (June 21, 2018) (hereinafter "Staff Presentation"), <https://www.arb.ca.gov/cc/capandtrade/meetings/meetings.htm>.

<sup>2</sup> Cal. Health & Safety Code § 38562(c)(2)(D).

<sup>3</sup> Staff Presentation at slide 26; ARB, Preliminary Discussion Draft of Potential Changes to the Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms (June 2018) at 17, <https://www.arb.ca.gov/cc/capandtrade/meetings/meetings.htm>.

<sup>4</sup> *Id.* at 27.

<sup>5</sup> Near Zero comment letter to ARB (Mar. 16, 2018); Danny Cullenward, Mason Inman, and Michael Mastrandrea, Interpreting AB 398's carbon offsets limits, Near Zero Research Note (Mar. 15, 2018),

sincerely thank ARB staff for clarifying their views on these important matters.

Although we are grateful that ARB staff have clarified their interpretation of AB 398's limits on carbon offsets, we remain deeply concerned about the Board's lack of substantive discussion on allowance overallocation. Our strong preference is to avoid further disputes over basic facts and establish a constructive working relationship with Board staff. We are agnostic about which solutions policymakers choose to adopt, so long as they are effective, and appreciate the many constraints affecting climate policy today.

Nevertheless, the explanations staff have offered with respect to allowance overallocation are factually incorrect and, to many outsiders, confusing. We offer a detailed response here in order to correct the record, with the sincere hope that we can work together going forward to ensure the cap-and-trade program achieves the substantial role the Board has chosen for it in meeting California's climate goals.

From an environmental perspective, managing the cap-and-trade program's excess supply of allowances is arguably the most important question affecting the design of ARB's post-2020 market. Yet the Board's discussion of this issue has continually failed to take into account the growing evidence—both in the Board's own data<sup>6</sup> and in multiple reports from credible, independent experts<sup>7</sup>—that excess allowances from the market's pre-2021 period are likely to be banked into the market's post-2020 period, causing low market prices that are insufficient to induce serious climate

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<http://www.nearzero.org/wp/2018/03/15/interpreting-ab-398s-carbon-offsets-limits/>.

<sup>6</sup> ARB, Mandatory GHG Reporting – Reported Emissions, <https://ww2.arb.ca.gov/mrr-data>.

<sup>7</sup> See, e.g., Environmental Commissioner of Ontario, Ontario's Climate Act: From Plan to Progress – Appendix G: Technical Aspects of Oversupply in the WCI Market (Jan. 2018), <https://eco.on.ca/reports/2017-from-plan-to-progress/>; Chris Busch, Oversupply Grows in the Western Climate Initiative Carbon Market, Energy Innovation Report (Dec. 2017), <http://energyinnovation.org/wp-content/uploads/2018/02/WCI-oversupply-grows-February-update.pdf>; Legislative Analyst's Office, Cap-and-Trade Extension: Issues for Legislative Oversight (Dec. 2017), <http://lao.ca.gov/Publications/Report/3719>.

mitigation and enabling emissions that are significantly higher than nominal program caps. Should these outcomes manifest, California will likely fail to keep statewide emissions below the mandated limit for 2030. We once again call on ARB to treat this issue with the seriousness it deserves.

Not only should ARB address allowance overallocation as a matter of good policymaking, but the Board is also obligated to provide a serious analysis under state law. AB 398 requires ARB to “evaluate and address concerns related to overallocation.”<sup>8</sup> For months, however, staff have dismissed these concerns without analysis or reference to the long list of relevant, independent studies.

The Board’s first and only formal discussion of the issue is contained in its April 2018 Post-2020 Caps Report.<sup>9</sup> ARB’s Report concluded that even if 150 million allowances are banked into the post-2020 market period, the cap-and-trade program would still generate at least as many reductions as called for in the 2017 Scoping Plan.<sup>10</sup> Rather than review the literature on allowance overallocation or offer its own calculations, staff cited only one independent report and argued why they believe overallocation will be lower than the report’s central estimate.<sup>11</sup> Most problematic, the Post-2020 Caps Report contains a serious methodological error, which we documented in a May 2018 Research Note and an associated comment letter in response to the May 2018 cap-and-trade workshop.<sup>12</sup> Staff dispute our findings.<sup>13</sup>

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<sup>8</sup> Cal. Health & Safety Code § 38562(c)(2)(D).

<sup>9</sup> ARB, Supporting Material for Assessment of Post-2020 Caps (Apr. 2018) (hereinafter “Post-2020 Caps Report”), <https://www.arb.ca.gov/cc/capandtrade/meetings/meetings.htm>.

<sup>10</sup> *Id.* at 14.

<sup>11</sup> *Id.* at 7-9 (citing LAO, *supra* note 7).

<sup>12</sup> Mason Inman, Michael Mastrandrea, and Danny Cullenward, Ready, fire, aim: ARB’s overallocation report misses its target. Near Zero Research Note (May 7, 2018), <http://www.nearzero.org/wp/2018/05/07/ready-fire-aim-arbs-overallocation-report-misses-its-target/>; Near Zero comment letter to ARB (May 10, 2018).

<sup>13</sup> Staff Presentation at slides 21-24.

We emphasize that the environmental integrity of the post-2020 program caps is essential to achieving California's climate goals. At a time when the federal government is backsliding on climate policy and science-based regulation, it is essential for California's environmental policies to demonstrate not only a path forward, but also a philosophy of putting data and analysis front and center.

**1. ARB admits the error Near Zero identified in the Post-2020 Caps Report and fails to respond to our criticism.**

Board staff now dispute our findings, despite admitting during the June Workshop to the specific error we identified. To review, ARB's Post-2020 Caps Report calculates the reductions attributable to the cap-and-trade program in the period 2021 through 2030 by taking the difference between projected greenhouse gas emissions and the number of compliance instruments:

$$\text{Projected Emissions (A)} - \text{Compliance Instruments (B)} = \text{Reductions (C)}$$

Or, more simply:

$$A - B = C$$

Near Zero's report shows that ARB erroneously inflated its Projected Emissions (A), and thereby inflated the Reductions (C) attributable to the cap-and-trade program. Specifically, ARB projected emissions from four economic sectors in their entirety, rather than the smaller set of facility-level emissions from individual emitters within those sectors that are regulated by the cap-and-trade program. (For those who prefer a visual illustration of the error, see Figures 1 and 2 at the end of this letter.)

While ARB's error might seem technically complex, it is entirely straightforward as a matter of fact. The Post-2020 Caps Report makes clear that it projects sector-wide emissions, rather than facility-level emissions

actually subject to the cap-and-trade program.<sup>14</sup> Near Zero also confirmed the Post-2020 Caps Report’s methods by replicating its calculations from primary sources.<sup>15</sup>

Notably, ARB Assistant Division Chief Rajinder Sahota confirmed the methodological error at ARB’s June Workshop. One of us (Dr. Cullenward) sent in a written question by email:

ARB staff’s April 2018 report states on page 11 that there will be 3,054 million tons of emissions over the period 2021-2030. This number is used to calculate the reductions from the cap-and-trade program in the staff report. Does this number represent projected emissions from covered sectors as modeled by PATHWAYS, or does it represent projected emissions from the more narrow category of covered emissions that are subject to the cap-and-trade program?<sup>16</sup>

Ms. Sahota responded:

It represents the covered sectors, which includes those emissions that are covered by cap-and-trade and a limited amount of fugitive emissions that are not covered by cap-and-trade. When compared against the caps, the caps have already been adjusted for the fact that not all of those emissions are covered by cap-and-trade.<sup>17</sup>

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<sup>14</sup> Post-2020 Caps Report at 11 (see Table 3, note ### (citing output from the Scoping Plan’s PATHWAYS model, which projects only sector-level emissions)).

<sup>15</sup> Inman et al., *supra* note 12 at 12-13. A spreadsheet with our full calculations is available at Near Zero’s website.

<sup>16</sup> Email from Dr. Danny Cullenward to ARB (June 21, 2018).

<sup>17</sup> Ms. Sahota’s remarks are transcribed in their entirety from an audio recording we made of the June 2018 workshop. There is no public recording or transcript of this hearing, although we will happily make available our recording to anyone who requests it. We understand that ARB’s primary auditorium is under renovation and therefore that the Board’s usual A/V capabilities are diminished temporarily. Nevertheless, we urge the Board to ensure that recordings of these public meetings are preserved in order to facilitate a common understanding of the process.

In fact, the difference between “covered sector” emissions and “covered emissions” is large, not “limited.” The projections ARB used are about 10% higher than corresponding projections for actual facility-level emissions, a distinction that leads to a cumulative increase of about 277 million tons of CO<sub>2</sub>e over the period 2021 through 2030<sup>18</sup>—more than the 236 million tons of emission reductions the 2017 Scoping Plan calls for from the cap-and-trade program over the same period.<sup>19</sup> When adjusted for this error, ARB’s calculations show that banking 150 million excess allowances from the pre-2021 period would lead the program caps to be non-binding through 2030, causing the program to fall well short of the role ARB identified in the Scoping Plan.<sup>20</sup>

Despite acknowledging the Board’s error, Ms. Sahota asserted that it does not matter because the Board has accurately set the number of Compliance Instruments (B). This is entirely non-responsive to Near Zero’s criticism. Our work did not allege or imply that ARB erroneously reported the market’s post-2020 supply of compliance instruments; rather, we used their exact numbers and confirmed their calculations from primary sources in preparing our own report. The only error we identified was ARB’s inflated numbers for Projected Emissions (A).

Again, ARB’s error inflates the calculated Reductions (C) attributable to cap-and-trade. Once those Reductions (C) are adjusted to account for the error in Projected Emissions (A), the reductions expected from cap-and-trade fall well below the levels required under the 2017 Scoping Plan<sup>21</sup>—without making any changes to the number of Compliance Instruments (B) in ARB’s current regulations.

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<sup>18</sup> Inman et al., *supra* note 12 at 12-13.

<sup>19</sup> ARB, California’s 2017 Climate Change Scoping Plan (Nov. 2017) (hereinafter “2017 Scoping Plan”) at 26, 28.

<sup>20</sup> Inman et al., *supra* note 12 at 13-14.

<sup>21</sup> *Id.* at 14.

Thus, even if we take as true all of the things staff now say about the post-2020 program caps, ARB has acknowledged that its response to AB 398's requirement to analyze overallocation is factually incorrect.

**2. ARB's claims about the integrity of the status quo program are arbitrary and unsupported by rigorous analysis.**

In response to Near Zero's criticism of the Post-2020 Caps Report, ARB staff make three arguments to justify the status quo approach they are considering—(1) that the program caps already account for emissions falling below program caps, (2) that the current program design achieves a 77.5% ratio between key program-year caps and statewide emission limits, and (3) that the current program supports a rising carbon price sufficient to keep total emissions below the 2030 emissions limit.<sup>22</sup>

Even if these arguments were true, we emphasize that they do not change the serious error Near Zero identified in ARB's calculations. Therefore, these arguments do nothing to change the fact that ARB's response to AB 398's instructions to analyze overallocation is factually inaccurate. As it happens, however, each of these arguments also is invalid and/or untrue. We respond to each below.

**a. ARB's post-2020 caps were not set using methods that ensure program stringency and consistency with the state's 2030 emissions limit.**

ARB's first argument is that Near Zero's criticism requires the Board to make an adjustment to program caps that is unnecessary because the post-2020 program caps currently in the Board's regulations were set using the very methods Near Zero asserts are necessary to ensure program stringency. Specifically, the Staff Presentation asserts that the post-2020 program caps have already been sufficiently adjusted to reflect the fact that covered

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<sup>22</sup> Staff Presentation at slides 16-24.

emissions are expected to be lower than the program cap in 2020.<sup>23</sup> This assertion is both procedurally and substantively deficient.

As an initial matter, it is important to note that the current post-2020 program caps were established in a rulemaking process that concluded after AB 398 extended ARB's authority to continue the cap-and-trade program, but without taking into account any of the requirements of AB 398.<sup>24</sup> Furthermore, the current post-2020 program caps were set prior to finalizing the 2017 Scoping Plan and may well be inconsistent with the role ARB identified for the program in the final 2017 Scoping Plan.<sup>25</sup>

In other words, the current post-2020 program caps were set in a process that did not require analysis of allowance overallocation nor consistency with the final 2017 Scoping Plan. Any such analysis—which is required under AB 398 and for consistency with the environmental analysis justifying the 2017 Scoping Plan—would need to be demonstrated in the current regulatory process. ARB has offered no such analysis to date.

On the substance of staff's claims, the Board has not offered an analysis of allowance overallocation and/or banking outside of its erroneous Post-2020 Caps Report. Asserting that the 2016 cap-setting process addresses these

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<sup>23</sup> *Id.* at slide 19.

<sup>24</sup> Danny Cullenward, Did the Air Resources Board just approve an illegal regulation while transferring hundreds of millions of dollars to the oil industry? (Aug. 2, 2017), <https://www.ghgpolicy.org/blog/resolution-17-21>.

<sup>25</sup> Near Zero comment letter to ARB (Oct. 27, 2017) (calling for ARB to ensure that the AB 398 implementation regulations match the final Scoping Plan's requirements), <http://www.nearzero.org/wp/2017/10/27/cap-and-trade-2030/>. When ARB finalized the post-2020 program caps that are currently in effect in its July 2017 regulations, ARB was anticipating that the cap-and-trade program would only need to deliver 191 MMtCO<sub>2</sub>e reductions over the period 2021 through 2030. ARB, The 2017 Climate Change Scoping Plan Update: The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target (Jan. 2017) at 41-42. But in the final 2017 Scoping Plan, ARB identified a need for 236 MMtCO<sub>2</sub>e over the same period. ARB, 2017 Scoping Plan at 26-28. *See also* ARB, Responses to questions at the Joint Hearing of the Senate Environmental Quality Committee and Senate Budget and Fiscal Review Subcommittee No. 2 (Jan. 17, 2018) at 8-9 (explaining the significant differences between the draft January 2017 and final November 2017 Scoping Plan), [http://senv.senate.ca.gov/sites/senv.senate.ca.gov/files/arb\\_responses.pdf](http://senv.senate.ca.gov/sites/senv.senate.ca.gov/files/arb_responses.pdf).

issues is insufficient and implausible on its face, as demonstrated by a brief review of the quantities involved.

The currently applicable post-2020 program caps include a set-aside of 52.4M allowances that were removed from the program caps and transferred to the Allowance Price Containment Reserve (APCR).<sup>26</sup> We note that ARB has not decided yet what to do with these allowances, which could potentially be made available at low prices and therefore still contribute to allowance overallocation in the market.<sup>27</sup> For the purposes of discussing ARB’s claims, however, we will treat these allowances as “removed” from the normal auction supply and therefore a step towards reducing allowance overallocation.

Whatever ARB decides to do with these allowances, they constitute a very small number relative to the scale of allowance overallocation. The size of ARB’s purported solution for cumulative allowance overallocation (52.4M allowances) is smaller than the extent of *annual* overallocation in 2016, the most recent year for which data are available (58.3M allowances).<sup>28</sup> Even if ARB expands the post-2020 APCR set-aside by an additional 22.7M, as staff are currently contemplating, the total set-aside (75.1M allowances)<sup>29</sup> would still be smaller than the number of allowances AB 398 transfers from the pre-2021 APCR to two post-2020 “price containment points” (81.2M

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<sup>26</sup> Cal. Code Regs., tit. 17, § 95871 (Table 8-2).

<sup>27</sup> Danny Cullenward, Mason Inman, and Michael Mastrandrea, Implementing AB 398: ARB’s initial post-2020 market design and “allowance pool” concepts, Near Zero Research Note (Mar. 16, 2018) at 7-8.

<sup>28</sup> Danny Cullenward, Mason Inman, and Michael Mastrandrea, California’s climate emissions are falling, but cap-and-trade isn’t the cause, Near Zero Research Note (Nov. 17, 2018); *see also* ARB, Mandatory GHG Reporting – Reported Emissions, 2016 MRR Data <https://ww2.arb.ca.gov/mrr-data>. We note that this calculation looks only at the difference between facility-level covered emissions and the total annual program cap in 2016.

<sup>29</sup> Cullenward et al., *supra* note 27 at 7.

allowances), making these excess allowances available at what will likely be lower prices.<sup>30</sup>

Most relevant, even the higher number ARB is currently contemplating (75.1M allowances) is much smaller than credible independent estimates of *cumulative* allowance overallocation through the end of 2020 from Energy Innovation (270M ±70M allowances),<sup>31</sup> the Legislative Analyst's Office (over 200M allowances),<sup>32</sup> and also the number ARB considered in its Post-2020 Caps Report (150M allowances).<sup>33</sup>

ARB has not properly justified its selection of APCR set-asides in relation to independent estimates of allowance oversupply; in fact, the size of the current APCR set-aside is even smaller than a single year's worth of overallocation, let alone credible projections of the cumulative bank of excess allowances into the post-2020 market period. Nor has the Board determined whether these allowances will be accessible at low prices, in which case their purported “removal” from the normal auction supply could be ineffective in addressing excess allowance supplies.

Thus, the assertion that the current post-2020 program caps were set using a method that addresses allowance overallocation is still unsubstantiated. We once again urge the Board to include all of the “pools” of allowances in the pre-2021 and post-2020 periods in a thorough analysis of allowance overallocation.<sup>34</sup>

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<sup>30</sup> Cal. Health & Safety Code § 38562(c)(2)(B); Cullenward et al., *supra* note 27 at 7.

<sup>31</sup> Busch, *supra* note 7.

<sup>32</sup> LAO, *supra* note 7.

<sup>33</sup> Post-2020 Caps Report at 13-14.

<sup>34</sup> Cullenward et al., *supra* note 27 at 11.

**b. ARB's choice to set the 2030 program-year cap at 77.5% of the statewide emissions limit is arbitrary and does not address serious issues related to allowance banking or overallocation.**

Staff appear to believe that the ratio between annual program caps and annual statewide emissions limits offers an appropriate metric for establishing the role of cap-and-trade in state climate policy.<sup>35</sup> By definition, however, an annual metric fails to account for cumulative issues such as banking and overallocation, which reflect how allowances will be saved up and used across multiple program years.

What staff offer is not a rule for ensuring program stringency, but a tautology. ARB correctly notes that in the original 2010 cap-setting regulation, the program caps were set to decline until such time as they reach 334.2 MMtCO<sub>2</sub>e in 2020.<sup>36</sup> This annual program cap is indeed 77.5% of the statewide emissions limit for 2020.<sup>37</sup> But it should come as no surprise that the ratio between the annual program cap ARB established for 2030 and the 2030 emissions limit is also 77.5% because ARB simply extended the current program without adjusting total program caps to address allowance overallocation.

As ARB acknowledges, the post-2020 program caps in the Board's current regulations were set by taking the program cap in 2020 (334.2M allowances) and reducing it on a linear basis each year such that the program caps decline to a 2030 program cap that is 40% below the 2020 program cap.<sup>38</sup> Because ARB used a program cap decline that matches the percentage decline between the 2020 and 2030 statewide emissions limits, it is a

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<sup>35</sup> Staff Presentation at slide 19.

<sup>36</sup> *Id.* at slide 17; *see also* Cal. Code Regs., tit. 17, § 95841 (Table 6-1).

<sup>37</sup> AB 32 set the 2020 climate target at 1990 emissions levels, which ARB determined to be 431 MMtCO<sub>2</sub>e using 100-year Global Warming Potentials from the IPCC's Fourth Assessment Report. ARB, California 1990 Greenhouse Gas Emissions Level and 2020 Limit, <https://www.arb.ca.gov/cc/inventory/1990level/1990level.htm>.

<sup>38</sup> Staff Presentation at slide 19; Cal. Code Regs., tit. 17, § 95841 (Table 6-2).

mathematical truism that the ratios between annual program caps and emission limits are the same in both 2020 and 2030.

As another stakeholder suggested at the June Workshop, the 77.5% ratio would better be described as the outcome of an earlier policymaking deliberation for limiting emissions through 2020, rather than an input that should control the strategy for achieving the 2030 emissions limit. To that we would add that the original 2010 cap-setting process appropriately reflected facility-level emission projections, which ARB has still not employed in the AB 398 implementation process. Simply put, there is no logical or empirical basis for using the 77.5% ratio as a metric for resolving allowance overallocation.

- c. **ARB’s focus on the cap-and-trade program’s “steadily increasing price signal” conflicts with the program’s role as a gap-closing policy instrument in the Scoping Plan, where it is described as guaranteeing that statewide emissions fall to the 2030 limit.**

Finally, we note a troubling inconsistency between the way staff are now describing the cap-and-trade program’s role in the informal regulatory process and its formal role in the 2017 Scoping Plan. If staff believe the 2017 Scoping Plan’s analysis of the cap-and-trade program is no longer valid, we encourage them to clarify that matter so that we are all operating on a common understanding of the program’s role going forward.

Staff now suggest that “[p]ost-2020 caps constrain emissions to support [a] steadily increasing carbon price signal”<sup>39</sup>—in other words, that the purpose of declining caps is to support a rising carbon price. But that description reverses the Board’s position in the 2017 Scoping Plan and incorrectly conflates a policy tool (carbon pricing) with the end goal of the policy (reduced emissions).

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<sup>39</sup> Staff Presentation at slide 24.

The 2017 Scoping Plan assumes that cap-and-trade will “fill the gap” between projected emission reductions resulting from the state’s regulatory programs and any reductions that are needed to keep emissions below the 2030 limit. The program functions as a quantity mechanism, ensuring that emissions fall in line with program goals.<sup>40</sup> Notably, ARB did not evaluate what carbon prices would be necessary to achieve its 2030 climate goal; the only mention of what carbon prices would be needed to keep emissions below mandated limits comes with the caveat that its assumptions “should not be used as a forecast of emission responses to allowance prices.”<sup>41</sup>

If ARB now believes that the purpose of the cap-and-trade program is to produce a reliable and steadily increasing carbon price, rather than to implement binding emission limits that are consistent with the state’s climate goals, staff should clearly indicate this new view. In that case, we would ask staff to provide analysis that demonstrates what carbon prices are consistent with the reductions called for in the 2017 Scoping Plan. Staff should also explain why, in comparing cap-and-trade and carbon taxes, the Board has consistently objected to carbon taxes as being too uncertain to deliver specific emission reduction goals. For example, the Board recently testified that:

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<sup>40</sup> See, e.g., ARB, 2017 Scoping Plan at 25 (stating the Final Scoping Plan’s strategy to “Continue the existing Cap-and-Trade Program with declining program caps to ensure the State’s 2030 target is achieved”); *id.* at 26 (describing the cap-and-trade program’s capability to deliver additional reductions if planned measures are delayed or ineffective, “to ensure the 2030 target is achieved”); *id.* at 30 (describing the final Scoping Plan Scenario and cap-and-trade’s projected backstop role to “ensure the 2030 target is achieved”); *id.* at 34 (Table 4) (noting under the criterion “Ensure the State Achieves the 2030 Target” that the cap-and-trade program “scales to ensure reductions are achieved,” despite uncertainty in projected emissions and emission reductions); *id.* at 52 (“Flexibility allows the Cap-and-Trade allowance price to adjust to changes in supply and demand while a firm cap ensures GHG reductions are achieved”); *id.* 53 (“The aggregate emissions cap of the Cap-and-Trade Program ensures that the 2030 target will be met—irrespective of the GHG emissions realized through prescriptive measures”); *see also* ARB, Responses to SEQ Questions, *supra* note 25 at 2-3 (describing the cap-and-trade program as a program that will achieve certain reductions with prices determined by the market).

<sup>41</sup> ARB, 2017 Scoping Plan, Appendix E: Economic Analysis (Nov. 2017) at 65.

As many economists and experts have previously noted, it is very difficult to identify the exact price for carbon that will result in an exact quantity of emissions reductions. This is one of the biggest challenges with a carbon tax—you don’t know where to appropriately set the tax so as not to miss the target or achieve the target at a higher cost than necessary—and this is one of the biggest advantages of a Cap-and-Trade Program—we do not need an exact price and we can allow the market to find the lowest-cost reductions first.<sup>42</sup>

Our view is that there are important tradeoffs between certainty in price outcomes and certainty in emission outcomes when choosing between a quantity-based program (a cap-and-trade program), a price-based program (a tax), or a hybrid instrument (a cap-and-trade program with a price ceiling and price floor). We are agnostic as to how California employs carbon pricing policy to support its climate goals, but will continue to evaluate whether appropriate analysis supports the tradeoffs policymakers select along these important dimensions.

Dating back to the original 2008 Scoping Plan, ARB has consistently rejected price-based policies and stated a preference for quantity-based policies to keep emissions below quantity-based limits. The Board’s unwillingness to demonstrate in the current regulatory process that its post-2020 program caps are capable of keeping statewide emissions below the 2030 limit in the presence of excess allowances carried forward from the pre-2021 period—even before addressing the question of how to implement AB 398’s price ceiling—is especially problematic given the lack of corresponding analysis on price-induced mitigation in the 2017 Scoping Plan.

As others have recommended, if the Board is concerned about high market prices, then the appropriate solution is to set the price ceiling at whatever level policymakers consider an acceptable balance between program costs and stringency. Maintaining an excess supply of allowances in order to

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<sup>42</sup> ARB, Responses to SEQ Questions, *supra* note 25 at 6.

reduce program costs will only serve to undermine both the program’s environmental benefits and the Board’s reliance on cap-and-trade as a quantity-based instrument that delivers real reductions on the basis of a firm emissions budget.

### **3. ARB’s response to Near Zero’s report repeats the same non-answer ARB staff provided in testimony to the Legislature.**

Finally, we believe it is important to emphasize that this exchange is no different from one that occurred at a May 2018 oversight hearing before the Joint Legislative Committee on Climate Change Policies.

The Joint Committee’s staff report reviewed ARB’s Post-2020 Caps Report and Near Zero’s Research Note, citing the error Near Zero identified and raising questions about the Board’s calculations.<sup>43</sup> Prior to the hearing, the Committee’s chairman and lead author of AB 398, Assembly Member Eduardo Garcia, echoed these concerns in remarks to a reporter:

“Our numbers don’t pencil out to be the same numbers they propose,” Garcia said. “We will go back and reexamine the numbers they are projecting. We have some questions about how they got there.”<sup>44</sup>

One of us (Dr. Cullenward) testified at the hearing in his capacity as a member of the Independent Emissions Market Advisory Committee, repeating the concerns Near Zero had previously identified.<sup>45</sup> ARB Deputy Executive Officer Edie Chang provided a response from the Board’s

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<sup>43</sup> Joint Legislative Committee on Climate Change Policies, Informational Hearing on Cap-and-Trade (May 24, 2018), [http://climatechangepolicies.legislature.ca.gov/sites/climatechangepolicies.legislature.ca.gov/files/Background%20Sheet\\_5.24.2018.pdf](http://climatechangepolicies.legislature.ca.gov/sites/climatechangepolicies.legislature.ca.gov/files/Background%20Sheet_5.24.2018.pdf).

<sup>44</sup> Julie Cart, Checking the math on cap-and-trade, some experts say it’s not adding up. *CALmatters* (May 22, 2018), <https://calmatters.org/articles/checking-the-math-on-cap-and-trade-some-experts-say-its-not-adding-up/>.

<sup>45</sup> Testimony of Dr. Danny Cullenward before Joint Legislative Committee on Climate Change Policies (May 24, 2018), <https://www.ghgpolicy.org/s/2018-05-24-Cullenward-testimony.pdf>.

perspective. As to the error Near Zero identified in ARB's Post-2020 Caps Report, Ms. Chang testified:

I want to note that the Committee Report cites a paper that claims there is an error in our staff analysis. We've reviewed the paper and evaluated that claim. Our conclusion is that there is no error in our analysis.

Simply put, the paper doesn't realize that we made an adjustment, and it makes that adjustment again. Now, the specific issue is that the paper claims that our analysis doesn't adjust the caps to account for the portions of covered sectors that are not covered [by the cap-and-trade program]—for example, fugitive emissions from the industrial sector. So this isn't true. Our caps in the post-2020 program are set based only on the portion of the inventory that is covered by the program, just like the caps in the pre-2020 program.<sup>46</sup>

In response to Ms. Chang's testimony, one of us (Dr. Cullenward) sent a follow-up letter to the Joint Committee containing the same analysis as in Section 1, above, and provided a copy to Ms. Chang.<sup>47</sup> Although the June 2018 ARB Staff Presentation provides more detail on ARB's view of the integrity of its post-2020 program caps, it is exactly as non-responsive as Ms. Chang's testimony with respect to the error Near Zero identified in ARB's work.

We take no pleasure in pointing out ARB's underlying mistake nor in identifying a pattern of non-responsive behavior. In fact, we would be very glad to leave this episode behind us and work with ARB on a serious analysis of allowance overallocation and program reforms.

Furthermore, we appreciate that all projections of allowance overallocation are uncertain, and therefore we can understand why the Board might be

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<sup>46</sup> Transcribed from video of the hearing published by The California Channel, [http://calchannel.granicus.com/MediaPlayer.php?view\\_id=7&clip\\_id=5543](http://calchannel.granicus.com/MediaPlayer.php?view_id=7&clip_id=5543) (clip begins at 17:25 minutes).

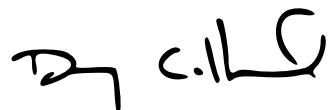
<sup>47</sup> Letter from Dr. Danny Cullenward to the Joint Legislative Committee on Climate Change Policies (May 30, 2018), <https://www.ghgpolicy.org/s/2018-05-30-Cullenward-letter-to-JLCCCP.pdf>.

cautious about making an intervention before the full extent of excess allowance banking is known. At the same time, it would be a mistake to wrongly insist, as the Board has now repeatedly asserted, that current program caps provide sufficient stringency in light of the gap between program caps and actual facility-level emissions to date. Drawing on recent reforms in cap-and-trade programs in the Northeastern U.S. and in Europe, we are confident that California could make dynamic program cap adjustments on the basis of empirical banking metrics that track the bank of excess allowances currently in the market—a bank that is large, growing, and if credible independent analysts are correct, could very well put California’s climate goals at risk unless properly managed in the near future.

ARB is at an important crossroads. As one of the leading climate regulators in the world, the Board has built up enormous goodwill for its persistent efforts to decarbonize a growing economy—efforts that are all the more important at this challenging time in the United States. We also respect how the Board’s legacy in tackling California’s notorious local air pollution problems rests on a history of scientific integrity, policy ingenuity, and political leadership. There is no shame in having a cap-and-trade program with excess allowances; all of the other major programs in the world have confronted the same challenge. For example, the Northeastern States’ RGGI program and the European Union’s ETS have both implemented reforms to address the problem of excess allowances, but ARB has so far been unwilling to even run the numbers. We call on the Board to live up to its high standards and address the pressing issue of allowance overallocation with the seriousness it deserves.

Thank you for the opportunity to comment and please feel free to contact us if we can provide any additional information.

Sincerely,



Danny Cullenward JD, PHD

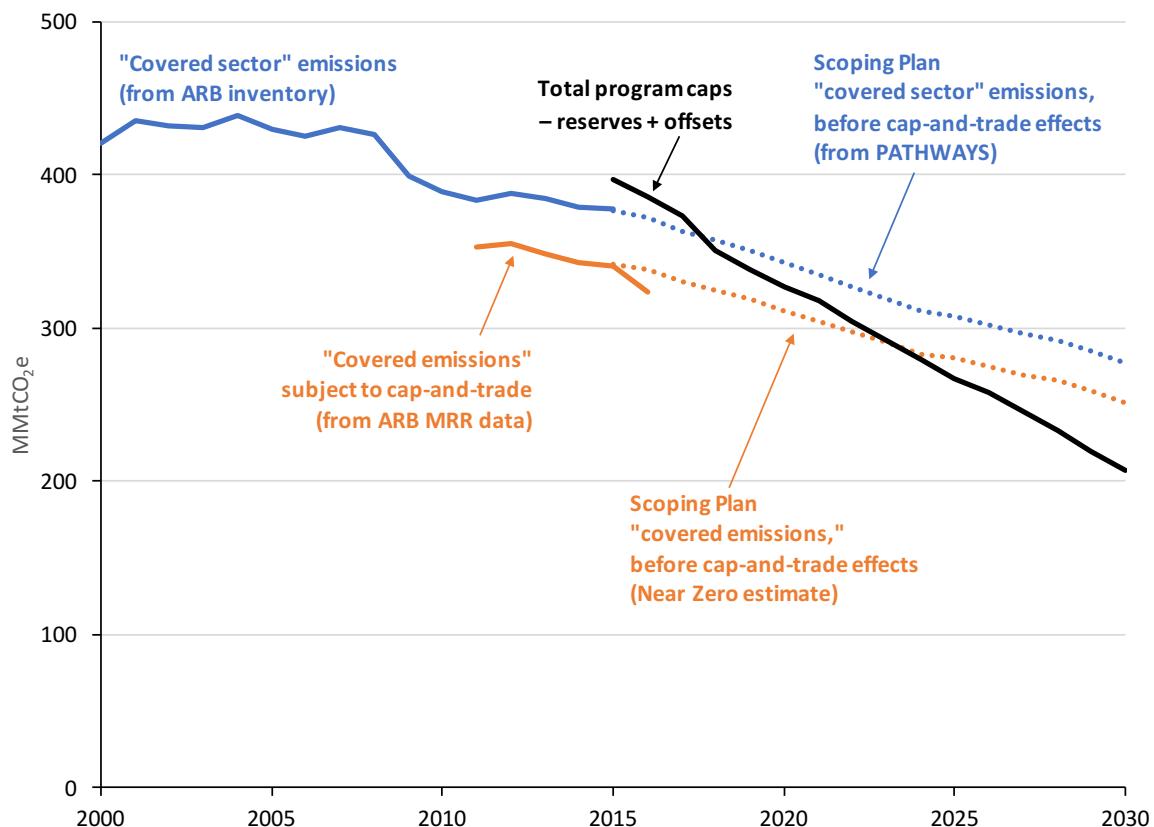


Mason Inman



Michael D. Mastrandrea PHD

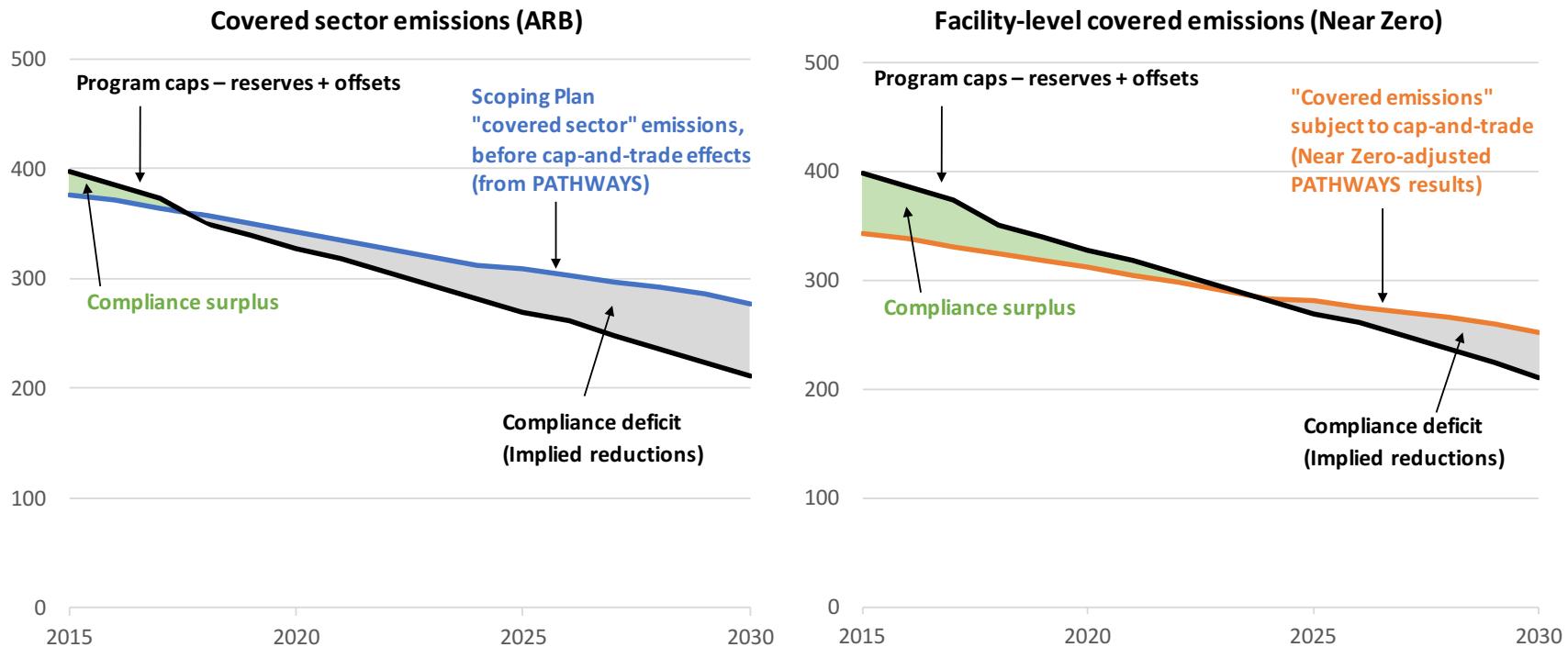
**Figure 1: ARB’s projection of “covered sector” emissions compared with historical covered emissions and Near Zero’s projection of “covered emissions.”**



ARB’s Post-2020 Caps Report incorrectly used projections of “covered sector” emissions from the PATHWAYS model, which includes about 10% more emissions each year than the facility-level “covered emissions” that are actually subject to the cap-and-trade program. Here, we show actual data in solid lines and projected data in dotted lines; the projections are color-coded with blue lines representing ARB’s erroneous choice of “covered emissions” and orange lines representing the smaller set of facility-level “covered emissions.” The black line indicates the annual program caps for 2015-2030, from which we remove allowances sent to the program’s reserve accounts (APCR and Voluntary Renewable Electricity) and add a supply of offsets (5% for 2015-20, 3% for 2021-25, 4.5% for 2026-30). The offset supply for 2015-2020 is based on historical compliance usage, and the assumptions for 2021-2030 match ARB’s assumptions in its Post-2020 Caps Report.

ARB incorrectly calculates the reductions from the cap-and-trade program as the difference between the dotted blue line and the black line. In contrast, ARB’s method should have calculated program reductions as the difference between the dotted orange line and the black line. In years where the black line is above projected emissions, a surplus of allowances is available; where the black line is below projected emissions, the program has an allowance deficit, requiring emitters to reduce their emissions or use banked allowances for program compliance (see Figure 2).

**Figure 2: Comparison of annual cap-and-trade program supply-demand balance (million metric tons of CO<sub>2</sub>e).**



Both panels show the annual compliance instrument surplus (green) and deficits (grey), which are determined by the difference between projected emissions and the supply of compliance instruments from the cap-and-trade program. The panel on the left shows the effect of ARB's inflated emission projections for "covered sector" emissions from the Scoping Plan scenario, which projects sector-wide emissions without any cap-and-trade program effects. With artificially high projected emissions, the program appears to run a substantial cumulative allowance deficit (grey), which ARB interprets as the program reducing emissions in line with the program caps. In contrast, the panel on the right shows the expected outcome when ARB's inflated emission projection is corrected. Rather than run a substantial allowance deficit, the program is expected to maintain a substantial annual surplus into the early to mid-2020s, and a cumulative surplus through 2030. If these surplus allowances are banked and used to maintain emissions at a level that exceeds program caps in the later 2020s, this would put the 2030 emissions limit at risk.