ENERGY INNOVATION
POLICY & TECHNOLOGY LLC

www.energyinnovation.org
98 Battery Street; San Francisco, CA 94111
chrisb@energyinnovation.org

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Radjinder Sahota
Assistant Division Chief
California Air Resources Board
1001 "I" Street, Sacramento

Dear Ms. Sahota:

Thanks to you and other ARB staff for your diligent work on the proceeding to amend the cap-and-trade regulation. Energy Innovation regularly sings the praises of the cap-and-trade program as world's best and highlights the state's incredible achievement of the AB 32 2020 target four years early. We commend you for the smart choices that enabled these achievements.

This letter offers two main recommendations related to the cap-and-trade program:

1. ***Adopt public data reporting changes in line with the Independent Emissions Market Advisory Committee report*** to increase information accessibility.

2. ***Introduce an emission quantity-adjusted price floor.*** Such a mechanism would connect the pace of increase in the price floor level to the rate at which statewide emissions are falling. If overall statewide emissions are not falling at the pace needed to meet the 2030 target, then the price floor would increase more quickly. If you do not adopt this suggestion in the current proceeding, we hope the idea will draw staff consideration for future implementation.

We continue to track the issue of the supply-demand balance in the market. The forecasted market behavior we had previously anticipated, in terms of fully sold-out auctions leading to most previously unsold allowances returning to the market, has so far been validated by real world behavior. The fact that auctions continued to sell out even amidst the uncertainty introduced by Ontario's withdrawal from the Western Climate Initiative strengthens our confidence that previous estimates captured market dynamics correctly. We appreciate the ARB staff giving increasing attention to this issue, as in Appendix D of the regulatory package.

We continue to support the cap adjustment approach we previously recommended, which RGGI used, adjusting future caps downward in an amount equal to the bank at the end of their phase one. By letting the phase one bank roll forward unaffected, incentives for early emission reductions and investment are not disrupted but are enhanced.

At the same time, given the very strong declines in emissions shown by the most recent annual data, the uncertainty about the precise price-reduction relationship needed for 2030 success, and the political risks if prices climb too high, we can understand the perspective that would lead to

disinclination to adopt wholesale changes in cap levels. Therefore, we offer the concept of a quantity-adjusted price floor as a more incremental adjustment.

Ultimately, the best result will be the lowest price sufficient to deliver the necessary emission reduction. However, the question of adequate stringency of the price signal demand consideration since ARB's 2030 strategy increases the importance of the tool within the state's overall climate policy strategy.

The remainder of the letter provides further discussion of the two main recommendations.

1. INFORMATION ACCESSIBILITY

We urge changes in line with the Independent Emissions Market Advisory Committee report, with definition and regular updating of metrics, such as allowances banked from one compliance period to the next. Having ARB serve as a referee as to some basic facts can only help to increase the quality of the public discourse and improve the chances of achieving mutual understanding and agreement.

Currently, key documents and terminology, especially the compliance instrument reports that ARB produces, are not understandable on their own. The reports use undefined terms like "limited use holding accounts." While the need for such complicated terminology is understandable given the complexity of the program, it serves as a barrier to all but full-time program participants, rendering these crucial spreadsheets inaccessible to most.

Even if the terms used in the compliance instrument report were defined, the precise timing of free distribution of allowances and submission of compliance instruments is not easily matched up to the quarterly compliance instrument reports, making it challenging to properly account for time boundaries in evaluating the balance of supply and demand in the market.

The upshot is that it is difficult to calculate the amount of allowances banked from one period to the next. It is unrealistic to believe that a typically motivated person could calculate such metrics. ARB's public information should not be accessible only to insiders. Therefore, we recommend CARB define, release, and regularly update some basic metrics related to banking and the performance of the market.

2. FORMALIZING CONDITIONS FOR ADJUSTMENT

The quantity-adjusted price floor would be a way to build in an automatic adjustment driven by what matters most, i.e. whether or not emission reductions are happening fast enough. Current self-ratcheting devices depend entirely on auction outcomes, which do not necessarily connect to whether or not the state is making adequate progress in lowering emissions.

We appreciate the ARB staff taking on the issue of optimal stringency in Appendix D of the 45-day materials. We agree that the state of the modeling on optimal stringency is, unfortunately, still in need of further development. We aim to contribute to the relevant research literature with the new California Energy Policy Simulator, to be released soon.

The results of our preliminary work with the California Energy Policy Simulator point to very strong benefits from California's pursuit of the SB 32 2030 goal, with economic benefits accruing after only

a few years, even before accounting for the monetized climate and public health benefits. The work finds that the state's policy portfolio includes the right elements while also indicating the need to steadily ratchet up policy stringency across the board, including carbon prices substantially above the floor price. A rising price on its own is not likely to deliver what carbon pricing will need to deliver to hit our deep decarbonization goals.

Appendix D of the 45-day materials cites research by Borenstein et al. (2017) to question the efficacy of a supply adjustment.[1] In reviewing the findings of the Borenstein et al. analysis, we reach different conclusions. We observe that the research the work casts doubt on the sufficiency of the carbon price signal under current conditions. Figure 7 of the 2030 Scoping Plan shows that the carbon pricing mechanism is expected to cause 236 MMT of CO2e reductions from 2021 to 2030. Borenstein et al.'s analysis finds that at the price ceiling, and therefore at maximum impact, California's cap-and-trade program would be expected to lower emissions 218 MMT in CO2e 2016 to 2030 (see Table 1). Therefore, the Borenstein et al. analysis indicates that fewer reductions from cap-and-trade should be expected over 15 years than CARB is planning for cap-and-trade to produce over the 10 years.

We discussed how the Borenstein et al. framework applies to the oversupply question in Energy Innovation's blog and provide a technical exposition of how the inelastic abatement supply curve embedded in the work drives the conclusions in a technical appendix. In sum, the constrained view of abatement supply in the Borenstein et al. analysis produces a result where the carbon price is most likely either at the floor or at the ceiling. If there is relatively little price-responsive supply of abatement from cap-and-trade, then it is true that a supply adjustment makes little difference. If abatement supply is inelastic, there's a good chance that a supply adjustment would move the intersection of supply and demand from one point within the price floor region to another within the same region, or from one point within the price ceiling region to another within the same region. In the extreme, if there is no price-responsive abatement, then the carbon price would always be at the floor or the ceiling, and a supply adjustment makes no difference in emissions under any circumstances.

Energy Innovation suggests continued evaluation, through quantitative modeling, of what emission reductions the cap-and-trade program will need to deliver, and what design features will deliver these reductions. We will offer up the insights of the California Energy Policy Simulator and will otherwise look for ways to be helpful.

Thanks for considering these comments.

Sincerely,

Chris Busch, Ph.D.

Research Director, Energy Innovation

[1] Borenstein, Severin, Jim Bushnell, and Frank Wolak. "California's Cap-and-Trade Market to 2030: A Preliminary Supply-Demand Analysis,"Energy Institute at Haas Working Paper Number 281.