

September 19, 2016

Clerk of the Board
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Proposed Amendments to the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms (Policy comment letter)

Dear ARB Staff and Board Members,

Thank you for the opportunity to comment on ARB's proposed extension of the cap-and-trade program.¹ We are longtime academic observers of California's energy and climate policies. Each of us has each spent over a decade conducting research on state, federal, and international climate policy with a particular focus on the design and implementation of emissions trading systems.

We strongly support California's goal of reducing greenhouse gas emissions in line with applicable statutory targets and executive orders, and believe that market-based climate policies, such as cap-and-trade, will be critical to achieving the deeper emission reductions required after 2020. We write here to address substantive policy and market design considerations in ARB's proposal. In a separate comment letter we also request clarification of ARB's legal authority to extend the cap-and-trade program after its current expiration at the end of 2020.

We make six recommendations for improving the rule:

1. Reduce the annual allowance budget to reflect the strong likelihood that in practice, feasible emission reductions from uncapped

¹ California Air Resources Board, Public Hearing to Consider the Proposed Amendments to the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms, Staff Report: Initial Statement of Reasons (Aug. 2, 2016) (hereinafter "ISOR"), *available at* <https://www.arb.ca.gov/regact/2016/capandtrade16/capandtrade16.htm>.

sectors will be less than from capped sectors in proportional terms—or provide a reasoned justification for the current assumption that both sectors can achieve equally proportional reductions.

2. Provide a reasoned basis for the post-2020 auction reserve price and the trigger price of the allowance price containment reserve (APCR). At present neither price is anchored to any scientific or economic rationale. We suggest tying these prices to the federal Social Cost of Carbon and/or to economic modeling that estimates high and low carbon prices necessary to achieve the 2030 statewide emissions limit, based on a reasonable consideration of economic and energy forecasting uncertainty.
3. Cancel unsold allowances at the end of 2020 rather than placing them into the allowance price containment reserve (APCR), in order to increase policy stringency. Allowing covered entities to bank surplus allowances from the pre-2020 phase into post-2020 compliance periods will discourage early investment in emission reduction technologies that will be key to accomplishing the 2030 and longer-term goals. Allowing banking of oversupplied pre-2020 allowances into the post-2020 period also reduces the environmental integrity of the policy.
4. Reconsider elimination of the 4% allowance allocation to the APCR. Alternatively, provide a reasoned justification for why circumstances now support preserving the 8% offset limit while eliminating the 4% APCR allowance allocation, which was established when the offset limit was increased from 4 to 8%.
5. Consider maintaining the existing disclosure regime for non-ARB jurisdictional markets. In the proposed regulation, parties would have 30 days to submit this information in the case of a “market disruption”—but that is too long to wait, should any sort of market crisis emerge.
6. Consider supplementing the Standardized Regulatory Impact Assessment with energy-economic modeling to more accurately assess the likely impacts of the proposed regulation.

Each of these recommendations is discussed in further detail below. We are happy to discuss any of these further with the Board or ARB Staff.

1. Consider lowering the Annual Allowance Budget to better account for the technical and regulatory challenges of reducing emissions in uncapped sectors.

The draft rule sets annual allowance budgets from 2021 through 2031 by assuming that the proportion of capped to uncapped emissions remains constant from 2020 to 2030.² This critical assumption is unjustified in the ISOR and is most likely false. If ARB's assumption of proportional reductions in capped and uncapped sectors turns out to be too difficult to achieve in practice, ARB will most likely fail to achieve the goals recently articulated in SB 32.³

We believe the allowance budget has been set too high. On the assumption that uncapped sectors reduce their emissions in line with the reductions in the proposed cap-and-trade extension, ARB sets the capped sectors' budget at 200.5 million metric tonnes carbon dioxide equivalent (mmtCO₂e) in 2030. Because we are skeptical that uncapped sectors can achieve a comparable share of emission reductions, we suggest the capped sectors' budget should be lowered to a level of approximately 160 mmtCO₂e in order to reflect more conservative assumptions about feasible reductions from uncapped sectors. Again, absent such a modification, the proposed regulation creates a significant probability that ARB will fail to comply with the statewide greenhouse gas emissions limit recently enacted in SB 32.

Fundamentally, the assumption that capped sectors will maintain their current proportion of total statewide emissions through 2030 is not credible without substantially more justification than the ISOR provides.

² ISOR at 12-13.

³ SB 32 established a 2030 statewide greenhouse gas emissions limit of 40% below 1990 levels. Cal. Health & Safety Code § 38566. In absolute terms, this target is equivalent to 258.6 mmtCO₂e in 2030. ISOR at 12.

In order for capped and uncapped sectors' emissions to maintain their current proportion, ARB has assumed that unspecified regulatory measures will lower emissions in the uncapped sectors by 40% from 2020 to 2030. But these sectors are uncapped precisely because their emissions are hard to measure, control, and regulate—and in some instances, for all of these reasons. For example, what is ARB's plan for lowering emissions by 40% from the agricultural sector, including the production of methane from ruminant animals and the emissions of nitrous oxide from soils? What about biomass burning from forestry?

Merely asking these questions illustrates why the assumption of constant proportionality most likely isn't sound. At a minimum, the state should consider how the proportion of emissions from capped sectors has changed from 2004 peak statewide emissions to the present: over this period, agricultural and forestry emissions have *increased* 7%, up from 33.8 to 36.1 mmtCO₂e.⁴ By contrast, statewide emissions as a whole have *decreased* by almost 10%, down from 487.6 to 441.5 mmtCO₂e.⁵

Thus, if intuition and recent history are any guide, ARB should make the opposite assumption: that uncapped sectors will have a harder time cutting emissions relative to capped sectors. This is especially true if easy reductions—the so-called low hanging fruit—have already been exploited. In that case, it would follow that uncovered sources will make up a larger fraction of statewide emissions in 2030 than at present or in 2020. In turn, capped sectors will have to reduce their emissions by a *larger* fraction than uncapped sectors in order to achieve SB 32's 2030 target. Given that the most cost-effective reductions are likely available within the electricity sector—a capped sector—our recommended approach may also be more cost-effective than ARB's constant proportionality assumption.

A more conservative approach to estimating capped sectors' contribution to the 2030 target would assume that emissions from uncapped sectors will remain in 2030 at their expected 2020 levels, which ARB projects will be

⁴ ARB, California Greenhouse Gas Emission Inventory – 2016 Edition (June 2016), available at <https://www.arb.ca.gov/cc/inventory/data/data.htm>.

⁵ *Id.*

~100 mmtCO₂e.⁶ This is a stark difference from the ~60 mmtCO₂e target ARB implicitly assigns to uncapped sectors in 2030.⁷ The difference (~40 mmtCO₂e) represents almost 16% of the state's 2030 target—a reduction in emissions that ARB assumes will be achieved in the uncapped sectors, without analysis or specificity.

Another way to interrogate this assumption is by examining required annual rates of emission reductions. Under ARB's proposal, capped sectors will reduce emissions at a constant rate from 2021 to 2030 of approximately 13.3 mmtCO₂e per year.⁸ In contrast, statewide emissions from all sectors must fall by 17.2 mmtCO₂e per year, leaving ~4 mmtCO₂e per year to be achieved by as-of-yet unspecified measures in uncapped sectors.⁹ For comparison, the required rate of statewide emission reductions from the most recent data in 2014 to the 2020 target is only ~1.8 mmtCO₂e per year.¹⁰ Thus, the share of 2030 ambition assigned to uncapped sectors requires reductions more than twice what is currently required for statewide progress toward the 2020 target.

Alternatively, if uncapped sectors maintain their emissions at 2020 levels in 2030, meeting the 2030 target requires that the budget for capped

⁶ ISOR at 12. The 2020 target is 431 mmtCO₂e; ARB projects capped sectors will achieve 334.2 mmtCO₂e in 2020, which implies that uncapped sectors could emit as much as 96.8 mmtCO₂e while still complying with the 2020 statewide target. *Id.* However, ARB also projects that capped sectors will emit less than the 334.2 mmtCO₂e limit in current regulations, and will instead emit only 322.6 mmtCO₂e. *Id.* This implies that uncapped sectors could emit up to 108.4 mmtCO₂e. Thus, based on ARB's projections for 2020, the potential range of maximum 2020 emissions from uncapped sectors is 96.8 to 108.4 mmtCO₂e.

⁷ ARB proposes that the 2030 budget for capped sectors should be 200.5 mmtCO₂e, maintaining a 77.5% share of the total state budget for 2030 (258.6 mmtCO₂e). *Id.* With this proposed budget for capped sectors, uncapped sectors are implicitly assumed to emit no more than 58.1 mmtCO₂e.

⁸ *Id.*

⁹ Taking the 2030 target as 258.6 mmtCO₂e and the 2020 target as 431 mmtCO₂e requires an average annual reduction of 17.24 mmtCO₂e per year over ten years. The difference between this rate and ARB's proposed rate of reductions for capped sectors of 13.3 mmtCO₂e per year is 3.94 mmtCO₂e per year.

¹⁰ California Greenhouse Gas Inventory, *supra* note 4.

sectors in 2030 should be ~160 mmtCO₂e, rather than ARB's proposed 200.5 mmtCO₂e. Our suggestion would require emission reductions from capped sectors over the 2021-2030 period of approximately 52%, rather than by 40% as ARB proposes.¹¹

If ARB believes (for reasons unspecified in the ISOR) that the 2030 allowance budget for capped sectors should be set at 200.5 mmtCO₂e—or some other intermediate value in between 160 and 200.5 mmtCO₂e—then Staff should provide a reasoned justification including a quantitative estimate for reductions to be achieved in uncapped sectors. In simply asserting without analysis that uncapped emissions will fall in proportion to capped sector emissions, the ISOR does not comport with recent experience, let alone the technical, economic, and political challenges of reducing emissions in the largest uncapped sectors.

2. Ground the Auction Reserve Price and the Allowance Price Containment Reserve (APCR) trigger price in a science- and economics-based justification.

As the Board and Staff are well aware, the Auction Reserve Price has been a critical design feature of the cap-and-trade program in the first two compliance periods. Given the ambition of the post-2020 program, and the surplus of allowances likely to be carried forward from the pre-2020 program under ARB's proposal,¹² it is likely that either the Auction Reserve Price, the APCR trigger price, or both will again dominate post-2020 market behavior. It is therefore striking that the value for the Auction Reserve Price (and perhaps the values for the APCR reserve prices as well) were chosen somewhat arbitrarily when first proposed.

¹¹ The 2020 budget for capped sectors is 334.2 mmtCO₂e. ISOR at 12. A 2030 budget for capped sectors of 160 mmtCO₂e would require a 52.1% reduction from 2020 levels; ARB's proposed budget for capped sectors of 200 mmtCO₂e would require a 40.0% reduction from 2020 levels.

¹² *Id.* at 13 (stating Staff's expectation that the APCR will hold "over 120 million allowances at the start of 2021").

Very low allowance prices are a remarkably common characteristic of cap-and-trade regimes, as we¹³ and others¹⁴ have noted. In particular, Borenstein et al. suggest that the California cap-and-trade market design will tend to produce allowance market outcomes that rest either at the price floor or at (or above) the APCR trigger price, but not in between — in no small part because the market is paired with strong complimentary measures. Although their analyses concern the pre-2020 period, there is reason to think that the conclusions will be just as relevant to the post-2020 period. After all, ARB is contemplating a post-2020 climate policy portfolio that is dominated by complementary policies, just as the case with the pre-2020 policy portfolio.¹⁵

We note with interest the changes that ARB has made to the APCR trigger price for the post-2020 period. ARB has proposed removing the tiered prices at \$40, \$45, and \$50 per allowance and replacing them with a single price level that is \$60 above the auction reserve price, which continues to rise at 5% plus CPI per year as before.¹⁶ Given what we have learned about the current program, and hence the APCR trigger price's likely

¹³ Michael Wara, Instrument Choice, Carbon Emissions, and Information, *Michigan Environmental and Energy Law Review* 4(2): 261–301 (2015); Michael Wara, Danny Cullenward, and Rachel Teitelbaum, Peak Electricity and the Clean Power Plan, *The Electricity Journal* 28(4): 18–27 (2015); Danny Cullenward, Leakage in California's Carbon Market, *The Electricity Journal* 27(9): 36–48 (2014a); Danny Cullenward, How California's carbon market actually works, *Bulletin of the Atomic Scientists* 70(5): 35–44 (2014b).

¹⁴ Severin Borenstein, James Bushnell, Frank Wolak, and Matthew Zaragoza-Watkins, Report of the Market Simulation Group on Competitive Supply/Demand Balance in the California Allowance Market and the Potential for Market Manipulation, Energy Institute at Haas Working Paper #251 (July 2014); Severin Borenstein, James Bushnell, Frank Wolak, and Matthew Zaragoza-Watkins, Expecting the Unexpected: Emissions Uncertainty and Environmental Market Design, Energy Institute at Haas Working Paper #274 (August, 2016).

¹⁵ ISOR at 313 (citing the PATHWAYS modeling results, which project cumulative emission reduction requirements over 2021 to 2030 of ~900 mmtCO₂e—700 to 800 mmtCO₂e of which are discussed as coming from complementary policies, leaving 100 to 200 mmtCO₂e from the cap-and-trade program); see also ARB, 2030 Target Scoping Plan Update Concept Paper (June 17, 2016) at 21-23 (describing ARB's vision for Concept 1: Complementary Policies with a Cap-and-Trade Program).

¹⁶ ISOR at 14-15.

importance to the performance of the post-2020 program, we believe that much more reasoning and justification should be provided for both the level of the auction reserve price and the APCR trigger price. The current arrangement seems arbitrary in that it is largely a path dependent result of design choices made in the original rule making. Since the APCR's reserve price is subject to modification in the current rule amendment, we believe that ARB should consider modifying the auction reserve price and taking the opportunity to provide a more reasoned basis for both the auction and APCR reserve prices.

Again, the current cap-and-trade market has operated at or very near or the auction reserve price for much of the program's existence.¹⁷ Thus, it would seem wise to reconsider whether the originally selected price floor—\$10 plus CPI plus five percent¹⁸—is optimal in light of the state's 2030 target. But there is no discussion or analysis in the ISOR of whether the price floor continues to be the appropriate minimum value sufficient to accomplish the climate objectives or increase the credibility of the market signal that ARB wants to transmit.

We have two suggestions for how to better ground these numbers is credible, scientific analysis.

First, ARB could adopt the mid-range federal Social Cost of Carbon (SCC) estimate as the auction reserve price—\$42 per tCO₂e in 2020, rising to \$50 in 2030.¹⁹ This would provide a scientific basis, however imperfect, for the minimum market price. It would guarantee that in the event macroeconomic forecasting errors and complementary policy interactions result in a lack of stringency in the cap-and-trade program, emitters at least

¹⁷ Danny Cullenward and Andy Coghlan, Structural oversupply and credibility in California's carbon market, *The Electricity Journal* 29(5): 7–14 (2016); see also CPI, California Carbon Dashboard, <http://calcarbondash.org/>.

¹⁸ Cal. Code Regs. tit. 17, § 95911(c). ARB's proposal would not change this structure. ISOR at 15.

¹⁹ Interagency Working Group on the Social Cost of Carbon, Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis – Under Executive Order 12866 (May 2013, Revised July 2015) (reporting the 3.0% discount rate SCC estimates, which are denominated in constant 2007 USD), available at <https://www3.epa.gov/climatechange/EPAactivities/economics/scc.html>.

face an obligation to incorporate the U.S. government’s best estimate of the present value of damages from their emissions.

Along similar lines, ARB could simultaneously adopt the high-end value proposed in the SCC update for the APCR price trigger—\$123 per tCO₂e in 2020, rising to \$152 in 2030.²⁰ While resulting in a greater range than the \$60 price spread between the effective price floor and ceiling proposed in the draft rule, our suggested APCR trigger values are grounded in a rationale for placing a maximum value on the price that entities in California pay to emit carbon—one that is representative of the tail risk for climate sensitivity across the probabilistic distributions in the most recent SCC estimate. Under our proposal, covered sources in California would not pay more for climate mitigation than the discounted value of damages from a high-climate-sensitivity warming scenario.²¹ If ARB adopts this recommendation, the Board should also consider including a mechanism to automatically review any updates to the federal SCC for potential adoption in the cap-and-trade program.

A second alternative would be to undertake a modeling exercise using an economic model similar to that in Borenstein et al.²² to determine the best- and worst-case price trajectories necessary to accomplish the SB 32 goals under a wide range of economic, policy, and technological assumptions. After completion of the exercise, ARB could set the auction reserve price and the APCR price trigger at these values, or, if the modeling included a sufficient number of scenarios to generate confidence intervals, at the upper and lower 95% confidence limits for marginal abatement cost (thus excluding extreme outlier scenarios). We note that this approach would require additional analytical work, but would achieve the highest certainty and reliability for establishing the program’s most critical parameters.

Real world experience in multiple cap-and-trade markets, our previous scholarship, and scholarship from others working on California’s climate policy demonstrates that the market is very likely to reside at either the

²⁰ *Id.* (reporting the 3.0% discount rate and upper 95% confidence interval climate sensitivity SCC estimates, using constant 2007 USD).

²¹ Assuming sufficient allowance supplies are available in the APCR.

²² Borenstein et al. (2016), *supra* note 14.

auction reserve price or the APCR price. This characteristic of the cap-and-trade market follows directly from its role as just one of multiple complimentary policies.²³ Therefore it is critical that these market price points reflect science-based analysis, rather than arbitrary choices retained from the status quo system. At a minimum, ARB should provide a stronger rationale for the numbers it selects for these critical set points in the market design than is provided currently in the ISOR.

3. Cancel unsold allowances at the end of 2020, rather than placing them into the allowance price containment reserve (APCR), in order to increase policy stringency and environmental integrity.

ARB has proposed placing allowances that are left unsold after 24 months into the APCR, most likely for use in post-2020 compliance periods.²⁴ We believe these allowances should be retired at the end of 2020, rather than placed into the APCR. The over-allocation of allowances in the current period is due to a number of factors—most notably much lower than forecast electricity demand and economic growth, high reliance on complementary policies, and resource shuffling in the electricity sector, all of which decrease demand for allowances. Yet the ISOR is silent on why the detrimental effects of the present oversupply condition should be carried forward into future compliance periods.

One reason may be to increase demand for unsold allowances during the pre-2020 compliance periods, which would lead to more revenue in the near term for the Greenhouse Gas Reduction Fund (GGRF). This would occur because significant volumes of allowances are not selling out at auctions at the current year's price floor of \$12.73 per tCO₂e—over 120 mmtCO₂e so far in 2016 alone.²⁵ Under ARB's proposal, unsold allowances would eventually be placed in the APCR, where they would

²³ Michael Wara, California's Energy and Climate Policy: A Full Plate, But Perhaps Not a Model Policy, *Bulletin of the Atomic Scientists* 70(5): 26–34 (2014).

²⁴ ISOR at 16-17.

²⁵ ARB, California Cap-and-Trade Program Summary of Joint Auction Settlement Prices and Results (August 2016), *available at* https://www.arb.ca.gov/cc/capandtrade/auction/results_summary.pdf.

become available for purchase at the auction reserve price plus \$60 per tCO₂e.²⁶ As a result, covered entities that are confident in the market's future would have an incentive to purchase surplus allowances not needed in the pre-2020 period in order to avoid significantly higher-than-inflation costs in the post-2020 period.

While resources for the GGRF are important for fully funding emission reduction programs that complement the cap-and-trade, raising GGRF revenue by allowing arbitrage across compliance periods creates serious risks for the post-2020 program. Just as ARB's proposal will raise demand now, so too will it decrease demand—and therefore prices—later. Particularly when combined with the proposal's already too-high cap (see Part 1, above), this will increase the risk that inadequate price signals emerge in the first part of the post-2020 period, compared to what is needed to drive the transformational investments required to achieve the 2030 target. If low prices reduce low-emission infrastructure investments in the early years, ARB's program design may lead to policy risk in the later years, at which point covered sources could argue that the 2030 target had become unachievable in practice. Simply put, a system designed for artificially low prices puts the ambitious 2030 target at risk.

To mitigate this risk, we urge ARB to cancel unsold and unused allowances at the end of 2020 so that forecast errors made (and policy interactions not fully anticipated) in the early program design phase do not ease the stringency of the of the post-2020 compliance periods. Low carbon prices during this critical transition period would send exactly the wrong message to covered entities. ARB should therefore consider revoking covered entities' ability to bank pre-2020 allowances for post-2020 compliance. Alternatively, ARB could take a more dynamic approach to alleviating oversupply, cancelling allowances left unused or unsold that have vintages older than the previous compliance period. For example, all pre-2018 allowances left unused or unsold in would be cancelled in 2021; in 2023, all pre-2020 allowances left unused or unsold would likewise be cancelled.

²⁶ ISOR at 16-17.

We also note that other over-allocated cap-and-trade programs—such as the European Emission Trading System (EU ETS)—have confronted similar challenges. When it became clear that Phase I of the EU ETS was over-allocated, that problem was self-contained because banking was not allowed between Phases I and II.²⁷ Similarly, when EU regulators observed that the use of Clean Development Mechanism (CDM) offsets had been problematic from an environmental integrity perspective, the EU banned the use of HFC credits from the CDM in Phase III.²⁸ We suggest that the problems facing ARB’s market at present resemble these challenges and call for similar responses.

Whatever ARB does, we urge it to consider that credible expectation of relatively high carbon prices in the 4th compliance period (2021-2023) will be an essential signal to investors and firms that must make the reductions needed to achieve the 2030 target. In our view, this issue is much more important than fully funding the GGRF in the near term.

Finally, we note that if ARB prefers to focus on the environmental attributes of the cap-and-trade program—as opposed to its role in developing a credible post-2020 carbon price trajectory—then the environmental integrity consequences of the proposed rule also require more attention. Oversupply in the current market is due, in part, to leakage from resource shuffling in the electricity sector.²⁹ Importing these impacts from the pre-2020 period into the post-2020 period would reduce the environmental integrity of the post-2020 program while depressing the market’s critical price signal.

²⁷ A. Denny Ellerman, Claudio Marcantonini, and Aleksander Zaklan, *The European Union Emissions Trading System: Ten Years and Counting*, *Review of Environmental Economics and Policy* 10(1): 89–107.

²⁸ *Id.*

²⁹ Cullenward (2014a), *supra* note 13 (reviewing early observed resource shuffling transactions and comparing projections of total resource shuffling potential against cumulative expected market reductions).

4. Reconsider elimination of the 4% annual allowance allocation to the APCR, or provide a reasoned justification for why circumstances support preserving the 8% offset limit without the 4% APCR allocation in post-2020 compliance periods.

In its original proposal for a cap-and-trade program in California, ARB limited use of offsets to 4% of the annual allowance budget in any given year. In response to comments received on this proposal, ARB doubled the percentage of offsets that entities may use for compliance purposes to 8% of the annual allowance budget. At the same time, and in order to balance this extra provision of cost-containment, ARB created the APCR and placed 4% of each year's allowance budget into it in order to insure that cap stringency was maintained despite the additional supply of offsets.³⁰

In the current proposed amendments to the cap-and-trade, ARB is proposing to phase down the 4% allowance allocation to the APCR with no change to the limitation on use of offsets for compliance purposes.³¹ There is no discussion of the reasoning behind this change other than that in Staff's opinion, supply to the APCR will be "sufficient to meet cost-containment needs of the program."³²

We ask for greater reasoned justification in the ISOR for eliminating the 4% of allowances allocated to the APCR without change to the offsets compliance limit. As explained in the first cap-and-trade regulation, these allowances were reserved when the fraction of offsets useable for compliance was increased from 4% to 8% of a covered entity's total compliance obligations. The current proposal includes no changes to the use of offsets for compliance, so ARB needs to explain why the reasoning that led to the creation of the APCR in the first place is no longer valid. We believe ARB should restore the 4% annual contribution to the APCR, both as an insurance policy against the potential for problems with offsets' environmental integrity and to overall maintain policy stringency.

³⁰ See California Air Resource Board, Proposed Regulation to Implement the California Cap-and-Trade Program, Vol. III, Appendix G: Allowance Price Containment Reserve Analysis (Oct. 28, 2010) at G-11 to G12, *available at* <https://www.arb.ca.gov/regact/2010/capandtrade10/capv3appg.pdf>.

³¹ ISOR at 13.

³² *Id.*

Finally, we note that ARB’s proposal reflects a major shift on offsets policy that needs further discussion and the possibility for comment on the part of interested parties.³³

5. Consider maintaining the existing disclosure regime for non-ARB jurisdictional markets because information disclosure will not be a priority for registered entities during a “market disruption.”

The proposed amendments would eliminate the obligation of market participants to disclose corporate associations in related markets, instead substituting a requirement that market participants make such disclosures within 30 days in the event of a “market disruption.”³⁴ We believe this creates unnecessary risk for minimal gain.

In the event of a profound market disruption, such as what occurred in California’s gas and power markets in 2000-01, market participants may be loath to make such disclosures. Compelling disclosure via legal action will take far more than the 30 days contemplated in ARB’s proposal. While ARB has developed experience as a market monitor in the carbon market over the past several years, this period has not actually illustrated how a disclosure regime would work *in a crisis*. Experience gleaned from calm waters is not necessarily relevant when presented with a hurricane.

If there ever is a crisis, ARB will want information immediately, not in 30 days—ask any member of California government who served through the 2000-01 electricity crisis and its aftermath. And if there really is a crisis caused by market manipulation—especially arbitrage between a FERC or CFTC jurisdictional market and an ARB jurisdictional market—the

³³ We note that ARB has also proposed contemplating the post-2020 use of sectoral forestry crediting programs in Acre, Brazil. However, ARB proposes that the form these programs would take is as a link to an external trading system, despite the fact that this type of program would normally be considered an offset program in substantive policy terms. *Id.* at 21-22. Whether such external links would count towards the 8% offsets limit is a critical policy question that deserves explicit deliberation and opportunity for notice and comment.

³⁴ *Id.* at 62-65.

entities responsible are not going to want to disclose this information and will likely require ARB to go to court to get it, causing further delay.³⁵

While we understand the desire to reduce regulatory burdens, both for the agency and for market participants, we are concerned that a disclosure regime that only requires disclosure in a crisis is likely to prove ineffective when it is needed most.

6. Consider supplementing the Standardized Regulatory Impact Assessment with energy-economic modeling to accurately assess the impacts of the proposed regulation.

In its Revised Standardized Regulatory Impact Assessment (SRIA), ARB presents the results of economic modeling aimed at assessing the impacts of the program on California economic activity, employment, and other indices.³⁶ This economic modeling estimates the costs of the program³⁷ and compares it to other regulatory alternatives.³⁸

Unfortunately, because the models employed to assess the program do not explicitly model the energy system in detail or even include greenhouse gas emissions³⁹—two self-evidently important variables for a greenhouse gas cap-and-trade policy—ARB is forced to estimate the cost of the proposed program by relying on 2014 emissions data, multiplied by the Auction Reserve Price and the APCR trigger price.⁴⁰

We are concerned that this approach may not be representative of the likely performance of the proposed program. This is especially true given

³⁵ For a recent example of how disclosure rules can be used to create delay, *see* Federal Energy Regulatory Commission, Order Suspending Market-Based Rate Authority, 141 FERC 61,131 (Nov. 14, 2012).

³⁶ ISOR, Appendix C.

³⁷ ISOR at ES-7; ISOR, Appendix C at 16-27.

³⁸ ISOR at 325-328; ISOR, Appendix C at 27-31.

³⁹ ISOR, Appendix C at 20 (“REMI is not an energy or emissions model, so it is not possible to estimate the emissions reductions that could be associated with a particular allowance price.”).

⁴⁰ *Id.* at 18-19.

the much greater ambition of the program from 2020 to 2030 as compared to the pre-2020 program. However, without an integrated energy-economic model to simulate the effects of the proposed regulation, there is no reliable means of estimating allowance prices necessary to achieve the targets. ARB's approach also renders comparison of alternative policies—direct regulation or a carbon fee—much less meaningful.

We note that California is home to research universities with a number of prominent economists who have simulated exactly these issues in the past for ARB—quite accurately predicting in advance that the odds pointed to over-allocation in the pre-2020 period.⁴¹ We urge ARB to either rely on this existing expertise or find alternative experts, tasking their selected advisers with more accurately constraining the expected allowance price trajectory needed to achieve the SB 32's 2030 target and characterizing key uncertainties affecting allowance prices.

The best economic and energy systems analysis is critical to making good decisions about the path forward for California's climate policy. Market-based climate policies, such as cap-and-trade, will be critical to achieving the deeper emission reductions required after 2020, and therefore it is all the more important that market design details are based on the highest quality technical analysis. Because the analysis presented in the SRIA and used to inform the ISOR does not actually simulate the emissions response of the covered sectors to a carbon price, ARB's efforts falls short of best practices and may have unintentionally produced misleading conclusions. We therefore urge ARB to conduct supplementary modeling efforts that estimate the dynamic response of the California economy to the imposition of the annual allowance budgets proposed in the ISOR.

Thank you again for the opportunity to comment on the proposed rule. We would be happy to discuss our comments further with ARB Board Members or Staff if there is any interest in doing so.

⁴¹ See Borenstein et al. (2014), *supra* note 14 at 3; see also Borenstein et al. (2016), *supra* note 14 at 4.

Sincerely,

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