

Testimony of Dr. Danny Cullenward

California Senate Environmental Quality Committee
Sen. Bob Wieckowski (Chair) & Sen. Jeff Stone (Vice Chair)

Oversight Hearing on California's Cap-and-Trade Program

May 10, 2017

Dear Chair Wieckowski and Vice Chair Stone,

Thank you for the opportunity to testify before your committee. My name is Danny Cullenward and I am an independent academic economist and environmental lawyer, presently employed by the non-profit climate research organization Near Zero. I hold appointments as a Research Associate in the Department of Global Ecology at the Carnegie Institution for Science and as a Lecturer at Stanford's School of Earth, Energy & Environmental Sciences. I earned my BS, MS, JD, and PhD in Environment and Resources at Stanford University and previously held the Philomathia Research Fellowship at the University of California, Berkeley, where I taught climate law and policy. Please note that I am testifying today in my individual capacity, and not on behalf of my employers or affiliates.

By way of background, I have conducted research on the design and implementation of state, federal, and international climate policy for more than a decade. I have published and lectured widely on California's cap-and-trade program and other key instruments in the state's energy and climate policy portfolio. I have also defended the state's climate policies in federal court as counsel for an amicus. My work in this area has been funded entirely by academic sources and non-profit grants that neither dictate the scope of my work nor control the content of my findings.

My testimony today concerns the current status and potential future role of California's cap-and-trade program in meeting the state's climate targets. In my view, the program should play an expanded role in the future. Cap-and-trade will be necessary to reach the state's ambitious climate targets, in addition to being essential for lowering total costs; however, legislative re-authorization and continued design improvements are

needed to address the ambition of the 2030 target. As a proud supporter of state climate policy, I want to see California extend its carbon pricing policy to ensure that the state is able to reach its climate targets and to demonstrate leadership at a time when it is needed most.

My testimony today addresses four key points:

- Without legislative re-authorization, California's existing cap-and-trade program will expire at the end of December 2020.
- The legislature should re-authorize cap-and-trade by a 2/3 vote in order to insulate ARB's authority from a Proposition 26 challenge.
- Re-authorization of the current cap-and-trade program design will lead to significant and immediate impacts on carbon and energy prices in California.
- A post-2020 carbon pricing policy should reflect the successes of the present program and include new features to address the challenges posed by California's ambitious 2030 climate target.

1. Without legislative re-authorization, California's existing cap-and-trade program will expire at the end of December 2020.

California's original climate statute, AB 32, authorized the Air Resources Board (ARB) to adopt a cap-and-trade program. Critically, however, the state legislature granted ARB the authority to use cap-and-trade only through the end of 2020:

In furtherance of achieving the [2020] statewide greenhouse gas emissions limit, by January 1, 2011, the state board may adopt a regulation that establishes a system of market-based declining annual aggregate emission limits for sources or categories of sources that emit greenhouse gas emissions, applicable from January 1, 2012, to December 31, 2020, inclusive, that the state board determines will achieve the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions, in the aggregate, from those sources or categories of sources.¹

¹ Cal. Health & Safety Code § 38562(c).

As this language indicates, ARB’s authority to implement a “system of market-based declining annual aggregate emissions limits”—in other words, a cap-and-trade program—is time-limited.

This provision stands in contrast to multiple other provisions in AB 32 that are not time-limited. For example, ARB has the authority to develop regulations to meet emission targets for the years 2020² and 2030,³ with the authority to achieve and maintain these targets in perpetuity. When a statute contains a time-limited provision alongside other provisions that do not expire, a reviewing court is likely to conclude that the Legislature meant to distinguish between applicable timeframes. As a result, both the plain text of Section 38562 and the most reasonable judicial interpretation of its context within AB 32 indicate that ARB does not have the legal authority to maintain its cap-and-trade program after 2020.

My Stanford University colleague Michael Wara and I have raised this issue with ARB in a public comment letter⁴ and I have also addressed it in academic scholarship.⁵ At ARB’s first public hearing on the proposed 2016 amendments to extend the cap-and-trade program through 2030,⁶ ARB Chair Mary Nichols acknowledged that ARB was aware of stakeholder concerns about ARB’s legal authority to proceed with post-2020 regulations, but indicated that ARB would not address those concerns in that hearing.⁷ Neither then nor at any point since has ARB articulated its legal

² *Id.* at §§ 38550-51.

³ *Id.* at § 38566 (as added by SB 32).

⁴ Danny Cullenward & Michael Wara, Comment letter to ARB re: Proposed Amendments to the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms (Legal comment letter) (Sept. 19, 2016), *available at* <https://www.ghgpolicy.org/law-policy/>.

⁵ Andy Coghlan & Danny Cullenward, State Constitutional Limitations on the Future of California’s Carbon Market, *ENERGY LAW JOURNAL* 37(2): 219-63 (2016); Danny Cullenward & Andy Coghlan, Structural oversupply and credibility in California’s carbon market, *ELECTRICITY JOURNAL* 29(5): 7-14 (2016).

⁶ ARB, 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), *available at* <https://www.arb.ca.gov/regact/2016/capandtrade16/capandtrade16.htm>.

⁷ ARB Board Meeting Transcript (Sept. 22, 2016) at 196, *available at* <https://www.arb.ca.gov/board/meetings.htm#2016>.

authority to issue post-2020 cap-and-trade regulations, including in its pending regulatory proposal.

If ARB finalizes its proposed regulation before the legislature re-authorizes cap-and-trade, I expect that program opponents will file a lawsuit asserting that ARB lacks statutory authority to extend the cap-and-trade program. In my judgment such opponents are likely to succeed, as explained further below. Hence, as a proponent of market-based climate policy, I urge the legislature re-authorize the cap-and-trade program with a 2/3 vote to insulate it from a Proposition 26 challenge.

2. The legislature should re-authorize cap-and-trade with a 2/3 vote in order to insulate ARB's authority from a Proposition 26 challenge.

California's original climate law, AB 32, passed the legislature by a simple majority vote in 2006 and was signed into law by Governor Schwarzenegger. As many stakeholders know, certain industry opponents challenged ARB's decision to implement a cap-and-trade program with revenue-generating auction allowances. These challengers alleged that ARB's auctions constituted an unconstitutional tax under Proposition 13 because AB 32 had passed by a simple majority vote, not the 2/3 supermajority vote that is required under Proposition 13 to levy taxes.

In April, an appellate court upheld ARB's cap-and-trade program, finding that the allowance auctions were not a tax and therefore were permissible under Proposition 13.⁸ Some observers have since argued that this decision suggests ARB is now on firm ground to extend its program on a simple majority basis⁹ despite the newer and tougher requirements of Proposition 26, which the voters passed in 2010. That opinion is mistaken for three reasons.

⁸ California Chamber of Commerce et al. v. State Air Resources Board, No. C075930 (3rd App. Dist. 2017), *available at* <http://www.courts.ca.gov/opinions/documents/C075930.PDF>.

⁹ *See, e.g.*, Cara Horowitz, Court of Appeals Confirms California Cap-and-Trade is Not a Tax, Legal Planet (Apr. 6, 2017), *available at* <http://legal-planet.org/2017/04/06/court-of-appeal-confirms-california-cap-and-trade-is-not-a-tax/>.

First, the allowance auction case concerned what constitutes a “tax” under Proposition 13, not Proposition 26. All three of the Justices agreed that Proposition 26 was not implicated in the decision,¹⁰ which means that neither the court’s analysis nor the case’s outcome is binding in the context of a future Proposition 26 challenge. Because Proposition 26 is triggered by any post-2010 change in statute,¹¹ new legislation to extend California’s carbon market would be subject to the stricter test of Proposition 26, not the more lenient standards under Proposition 13.¹²

Second, the case’s core reasoning—that the purchase of cap-and-trade allowances at auction is a voluntary activity¹³—does not adequately protect against a future Proposition 26 challenge. The state could argue that a purchase of allowances at auction is not a “levy, charge or exaction imposed by the State”¹⁴ under Proposition 26 because it is a voluntary purchase and therefore it is not strictly “imposed,” but that logic is strained in the context of a new program that is designed to reduce greenhouse gas emissions an extra 40% by 2030. Although the appellate court concluded that regulated entities have a variety of ways to comply with a program designed to reach the relatively modest 2020 target, it is not clear that this reasoning would apply to the deep and ambitious SB 32 target for 2030.

Third, plaintiffs have now appealed the case to the California Supreme Court. We do not yet know if the high Court will take the case; but if it does, it is premature to assume any particular outcome or rationale on review, and therefore any theory that rests on the appellate court’s reasoning is subject to a high degree of uncertainty.

Some might suggest that even without *California Chamber of Commerce*, the legislature could authorize cap-and-trade with a simple majority because Proposition 26 includes a number of textual exceptions to the definition of “tax.” However, none of these exceptions permits the extension of a cap-and-trade program that includes revenue-generating allowance

¹⁰ *California Chamber of Commerce*, slip op. at *26-29 (majority analysis); *id.* at *1 (Hull, J., dissenting).

¹¹ Cal. Constitution Art. XIII A § 3(a).

¹² Coghlan & Cullenward, *supra* note 5 at 228-31; *California Chamber of Commerce*, slip op. at *28-29.

¹³ *California Chamber of Commerce* at *39-44.

¹⁴ Cal. Constitution Art. XIII A § 3(b).

auctions.¹⁵ As a result, the Legislature must re-authorize such a program with a 2/3 vote in order to ensure the legality of California's post-2020 cap-and-trade program. Anything short of a 2/3 vote will lead to protracted litigation in which opponents will have strong arguments to challenge the validity of the new program.

Finally, it bears repeating that neither ARB nor any other public stakeholder has offered a legal theory explaining how a post-2020 version of a cap-and-trade program could be authorized by a simple legislative majority. In contrast, my colleagues and I have evaluated these issues in public comment letters and academic scholarship. I welcome further discussion on this question but after more than a year of public engagement with government, industry, and non-profit lawyers working on this issue, my view is that the silence speaks for itself. I therefore believe a 2/3 vote is essential to continuing California's leadership in this important policy area.

3. Re-authorization of the current cap-and-trade program design will lead to significant and immediate impacts on carbon and energy prices in California.

California's current cap-and-trade program is oversupplied, meaning there is a greater supply of allowances than the market demands for compliance purposes.¹⁶ In practical terms, this coincides with total emissions from covered sectors falling below the level of the market cap.¹⁷ As a result of oversupply conditions, market prices are low and demand at quarterly allowance auctions has been poor.

Today's market design has worked well, in the sense that these outcomes are exactly what one would expect when emissions fall below the

¹⁵ Coghlan & Cullenward, *supra* note 5 at 246-54. It is possible that a cap-and-trade program that freely allocates 100% of the allowances to regulated industries could avoid the definition of a tax, but such a program would place high and inequitable cost burdens on California consumers, particularly low-income families. *Id.* at 249-52.

¹⁶ Chris Busch, Recalibrating California's Cap-and-Trade Program to Account for Oversupply, Energy Innovation LLC Report (Mar. 2017), *available at* <http://energyinnovation.org/team-member/chris-busch/>; *see also* Cullenward & Coghlan, *supra* note 5.

¹⁷ LAO, The 2017-18 Budget: Cap-and-Trade at 14 (see Figure 7), *available at* <http://www.lao.ca.gov/Publications/Report/3553>.

capped levels—in this case, due to a combination of reduced economic growth after the Great Recession, the success of California’s complementary policies (like the renewable portfolio standard and energy efficiency programs), and divestment of imported coal-fired generation.¹⁸

But today’s market design has, through no fault of ARB’s own, created a significant challenge: because the market’s authority sunsets in 2020, the oversupply of allowances has depressed market demand and prices, resulting in a glut of allowances that are not needed for pre-2020 compliance purposes. These relatively low-value allowances would suddenly take on a significantly higher value, however, if they could be used for post-2020 compliance purposes. This is because ARB’s market design includes a policy of unlimited “banking” of allowances for use in future compliance years.¹⁹ With unlimited banking, the only thing restraining market forces from buying and holding as many of the surplus allowances as they can is the presence of entity-level holding limits.²⁰ Even with holding limits, however, the value of these allowances would immediately reflect their new use in the post-2020 period, resulting in energy price increases.

As a result of oversupply and unlimited banking, any extension of the current market design model would therefore lead to an immediate price increase as compliance purchasers and speculators would suddenly value today’s oversupplied allowances at tomorrow’s high compliance costs. Higher carbon prices would immediately be passed on to consumers in the form of higher energy prices—at the gasoline pump and in utility bills.

It is important to emphasize how much more ambitious the 2030 target is. To reach the 2020 target of 431 MMtCO₂e, California will need to reduce its emissions from the most recent data for 2014 by about 1.8 MMtCO₂ per year.²¹ To go from 2020 to 2030, California will need to reduce its emissions by about 17.2 MMtCO₂e per year—almost ten times the

¹⁸ Danny Cullenward, Leakage in California’s Carbon Market, *ELECTRICITY JOURNAL* 27(9): 36-48 (2014).

¹⁹ Cal. Code Regs., tit. 17, § 95922.

²⁰ *Id.* at § 95920. The 2017 holding limit is 12.7 MMtCO₂e. ARB, The Holding Limit for the California and Québec Cap-and-Trade Programs (2013), available at https://www.arb.ca.gov/cc/capandtrade/holding_limit.pdf.

²¹ ARB, California Greenhouse Gas Inventory – 2016 Edition, available at <https://www.arb.ca.gov/cc/inventory/data/data.htm>.

annual rate of current emission reductions.²² If instead we begin to reduce our emissions as quickly as possible, it will take about 11.4 MMtCO₂e per year through 2030—about six times the annual rate of current emission reductions.²³ As these calculations indicate, it will take between six to ten times the rate of current ambition to achieve our SB 32 target, which suggests that significantly higher carbon prices will be necessary to achieve these ends.

Estimating the magnitude of price impacts from re-authorization presents a complex question. One way to estimate the impacts is to consider the floor and ceiling prices that ARB has identified in its post-2020 proposed regulations as a rough proxy for possible outcomes. In responding to a recent question about future allowance prices from Assembly Member Vince Fong, the LAO estimated that future market prices in 2021 could be between the floor price and allowance price containment reserve as estimated in ARB’s proposed cap-and-trade extension regulation, noting that prices could be even higher than this range in the future.²⁴ This would place allowance prices at between \$16 and \$70 per ton CO₂e in 2021, and possibly higher.²⁵

Independent academic research also suggests that high price impacts are likely needed to achieve the 2030 target, and therefore indicate the potential for large and sudden carbon price increases in response to re-authorization of the current market design. For example, leading economists at UC Berkeley, UC Davis, and Stanford have concluded that there was about a 12% ex ante chance that allowance prices would hit or exceed the reserve price levels in California’s pre-2020 system (beginning at \$40 per ton CO₂e).²⁶ Given that California’s target for 2030 requires a

²² *Id.*

²³ *Id.*

²⁴ LAO, Letter to Honorable Vince Fong Regarding Potential Future Effects of Fuels in Cap-and-Trade Program (Apr. 3, 2017), *available at* <http://www.lao.ca.gov/Policy-Areas?areaId=10>.

²⁵ *Id.*

²⁶ Severn Borenstein, James Bushnell, Frank A. Wolak, and Matthew Zaragoza-Watkins, Expecting the Unexpected: Emissions Uncertainty and Environmental Market Design, Energy Institute @ Haas Working Paper 274 at 38 (see Table 9), *available at* <https://ei.haas.berkeley.edu/research/working-papers.html>. Note that this was the probability the authors’ models assigned

six- to ten-fold increase in the average annual rate of emission reductions, it seems entirely plausible that we could see carbon prices increase to more than \$50 per ton CO₂e upon re-authorization (about \$0.40 per gallon of E10 gasoline). Given the ambition of the SB 32 target, I see no reason to rule out \$100 per ton CO₂e (about \$0.80 per gallon of E10 gasoline). These plausible price impacts are also in line with the increased difficulty of reducing emissions from the transportations sector, since most of the cheap abatement options in the electricity sector will be exhausted by 2020 and the market will therefore need to find additional abatement in other, more expensive sectors.

For these reasons, a re-authorization of the current market design that includes unlimited banking would cause significant and immediate impacts on carbon and energy prices, reflecting the newfound value that today's oversupplied allowances would take on for use in the post-2020 compliance period. These impacts would occur immediately and without adequate protections for households and businesses. The only way to prevent these impacts from occurring is to prohibit the use of pre-2020 compliance instruments for use in post-2020 compliance.

4. A post-2020 carbon pricing policy should reflect the successes of the present program and include new features to address the challenges posed by California's ambitious 2030 climate target.

California's current cap-and-trade program includes a number of features that have resolved challenges that frustrated earlier programs. For example, the state's auction price floor has kept carbon prices relatively high despite low overall demand for allowances. Another successful feature is the auction of utility consignment allowances to compensate utility ratepayers for the costs of the cap-and-trade program on utility bills.

An effective post-2020 market design will need to build on these successes to confront the ambition of the SB 32 target for 2030. Key policy design considerations include:

- **Increased revenue recycling.** Today's program recycles revenue collected from auctioning consignment allowances that were freely allo-

to the likelihood of hitting or exceeding the APCR value based on 2010 economic and emissions data and the 2020 target.

cated to utilities. This protects utility ratepayers from cost impacts on their utility bills, but does not address impacts to gasoline prices. Because the SB 32 target will require higher carbon prices that visibly increase gasoline prices, a post-2020 program should expand revenue recycling to compensate consumers for all increased energy costs, including gasoline prices. If a significant share of program revenue is dedicated to revenue recycling, the Legislature can ensure a strong progressive outcome, making sure that benefits to low-income consumers exceed the impacts from higher energy prices. I recommend that the Legislature evaluate the peer-reviewed literature on revenue recycling in carbon pricing policy design and consider recycling at minimum 60%, and ideally at least 80%, of total revenue, depending on the Legislature's goals for protecting low-income Californians. The more revenue that is recycled, the more low-income families will benefit.

- **Increased protections for businesses.** Today's practice of freely allocating allowances to trade-exposed industries appears to function well at low prices present in the market, but this policy mechanism has not been tested for higher prices and is unlikely to be sufficient to address leakage and competitiveness impacts that affect California businesses under higher carbon price scenarios. A post-2020 program should develop stronger protections to manage economic competitiveness.
- **Cost containment via a hard price ceiling.** Cost containment will be necessary in a fundamentally more ambitious cap-and-trade program to ensure that businesses can plan around maximum costs and that market prices do not change too rapidly. It is also necessary to minimize the risk that the Governor might suspend the cap-and-trade program if prices rise to unacceptably high levels.²⁷ Both ARB's own economic advisors²⁸ and the LAO²⁹ have called for a hard price ceiling, at which ARB would issue unlimited allowances at some fixed price. If the market hits the price ceiling, emissions could rise above the cap; but if combined with spending priorities that encourage additional mitigation

²⁷ Cal. Health & Safety Code § 38599.

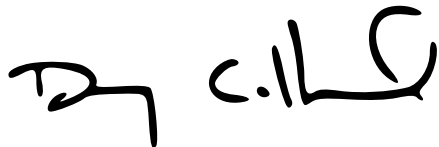
²⁸ Severin Borenstein et al., Issue Analysis: Price Ceiling in the Greenhouse Gas Emissions Cap-and-Trade Market (Nov. 8, 2013), *available at* <https://www.arb.ca.gov/cc/capandtrade/emissionsmarketassessment/pricceiling.pdf>.

²⁹ LAO, *supra* note 17 at 21-22.

and/or additional regulatory policies authorized pursuant to SB 32, a hard price ceiling would offer much-needed cost containment without sacrificing environmental performance.

- **Separation of trading periods.** If the Legislature wishes to avoid sudden price increases associated with re-authorization, I recommend prohibiting the use of current market compliance instruments for use in the post-2020 period. Only by separating the two compliance periods can the Legislature transition the carbon price from a low level to a high level without near-term price impacts and in tandem with developing increased protections for low-income households and businesses in the post-2020 period.
- **Improvements in local air quality.** Finally, I recommend that post-2020 cap-and-trade design discussions continue alongside measures designed to improve local air quality in California's most polluted communities. I do not expect that good cap-and-trade market design will be sufficient to deliver these local air quality improvements on its own, but it can work in harmony with other, more targeted efforts.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Cullenward'.

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