

December 1, 2009

Dr. Lawrence Goulder  
Chair, Economic and Allocation Advisory Committee  
California Air Resources Board  
1001 I Street  
Sacramento, CA 95814

Dear Dr. Goulder and Members of the EAAC:

On November 16, 2009, the Economic and Allocation Advisory Committee made available a draft of its report “Allocating Emissions Allowances Under California’s Cap-and-Trade System.”<sup>1</sup> In this letter, we provide comments on this draft report.

Overall, we wish to commend the EAAC for an excellent job in developing its report under challenging time constraints. The report provides a comprehensive and accessible assessment of the options available for using GHG emission allowance value, and the tradeoffs among these various options. Our comments are made in the spirit of helping the EAAC better communicate the options and tradeoffs available to California for initial allocation of GHG allowances, clarifying certain details within the set of complex issues the report addresses, and helping the EAAC in its critical task of providing recommendations to CARB as it designs the GHG cap-and-trade system.

We have organized our comments into two sections: general comments; and specific comments on points made within the report.

### **General Comments**

1. We believe it could be valuable to put the magnitude of GHG allowance value into context through comparisons with other economic metrics, such as existing state tax revenues, which were \$109 billion for the fiscal year ending June 2008.<sup>2</sup> As suggested in the report’s table, “Illustrative 2020 Allowance Prices and Total Value of Allowances” (page 29), allowance value can be large in comparison these revenues, reaching more than \$10 billion under many scenarios. The potentially large value of these allowances and the State’s recent fiscal woes suggests the strong possibility of some tension between potential options to target allowance value to particular uses, and the use of allowance value to address general fiscal considerations. The committee might consider elaborating on these issues in its report, particularly in light of the tradeoffs among the state’s many spending priorities, the economic costs imposed by taxes, and other broad fiscal implications. Such a perspective could be exceptionally valuable to help ensure that the opportunity costs of allowance use are fully appreciated.

In this same vein, we believe that the committee should consider identifying one or more preferred fiscal uses of the money in the event that allowance value remains after all uses meeting policy criteria have been undertaken. These policies could include all cost-effective “investments” and all allocations appropriate to address distributional concerns (for example, those associated with compensation or use of public goods.) The statement made in the draft proposing that the EAAC identify “fall back use” for allowance values appear to be made in the

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<sup>1</sup> [http://www.climatechange.ca.gov/eaac/meetings/2009-11-18/EAAC\\_Allocation\\_Report\\_2009-11-16-3.pdf](http://www.climatechange.ca.gov/eaac/meetings/2009-11-18/EAAC_Allocation_Report_2009-11-16-3.pdf)

<sup>2</sup> California State Controller’s Office, “State of California Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 2008,” page 11.

same spirit as our recommendation. This preferred fiscal use could reflect options already proposed by the EAAC, such as consumer rebates (or “dividends”) or reductions in tax rates, or some combination of uses.

2. With regard to “investment” uses of allowance value considered in the report, decisions to provide public funding of programs, initiatives, or other investments are best evaluated under standard economic and policy criteria to ensure that such programs create net economic benefits. The report should encourage the use of these criteria for all investment uses to reduce the possibility of funding programs through investments that could be better made for other functions.

In this same spirit, we recommend that the EAAC recognize that, particularly within the realm of environmental policy, government programs are usually designed to address some sort of *market failure*. (Distributional concerns would be a distinct justification for such programs.) As the draft report recognizes, there are important market failures associated with both energy efficiency programs and underinvestment in research and development that may be appropriate rationales for public intervention. However, investments of allowance value in the absence of such *market failures* can lead to socially inefficient subsidies.

The report should note the fact that other AB 32 policies and programs are encouraging or requiring certain activities that are identified as potential investments uses for GHG allowance value. For example, residential and commercial energy efficiency is currently being encouraged through numerous utility programs. Targeting these measures through incremental use of allowance value will only be cost-effective if any such incremental programs are designed to avoid redundancy and competition with utility programs

In its discussion of market failures and potential opportunities to lower the cost of achieving GHG emission targets, the EAAC should elaborate on the important distinction between *market failures* that may prevent otherwise cost-effective activities from being undertaken, and *market barriers*, which reflect tangible or intangible costs of undertaking activities that reduce energy use.

3. We believe that the Committee should add a discussion of the implications for California policy and allowance value of the development and implementation of a federal cap-and-trade system. Depending on its design, a federal cap-and-trade system could have profound consequences for total allowance value. If the California system is *pre-empted* by a federal program, then allowance value will depend on rules for transferring California allowances into federal allowances. If a federal system is implemented *in addition to* a California system, then the value of California allowances would diminish significantly.<sup>3</sup> An exemption (or “carve out”) of California from a federal cap would leave a California cap unchanged (unless the two systems are linked through allowance trading.) These various outcomes foster considerable uncertainty for the permanence of GHG allowances as a source of value for the State to use to achieve its goals.

### **Specific Comments**

1. On page 3, a comment in the existing draft suggests expanding the discussion of how evaluation criteria relate to AB 32 policy objectives. We agree. To the extent that potentially costly modifications to AB 32 policies are being considered as a means to achieve policy goals, use of allowance value provides a potentially less costly approach to addressing these objectives. For

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<sup>3</sup> In effect, California allowances would reflect the incremental stringency imposed by California’s cap-and-trade system above and beyond requirements from the federal system

example, through the use of allowance value to achieve AB 32 goals related to ancillary benefits and disproportionate, localized impacts, CARB can avoid potentially costly modifications to the GHG cap-and-trade system that have been proposed by some achieve these goals, such as geographic (zonal) restrictions on GHG allowance use or restricting use of GHG offset credits.<sup>4</sup>

2. In the discussion of the “Main Alternatives” (page 5), the current draft of the report states: “Also, the choice between the two approaches can have implications for the overall economic cost of the cap-and-trade system.” The sentence appears to refer to the choice between distribution of GHG allowances through free allocations and auctioning. However, aside from certain special circumstances (e.g., updating allocations), the choice between free allocations and auctioning in and of itself does not affect the economic cost of a cap-and-trade system. Instead, it is the chosen *uses* of allowance values from an auction that can affect the economic cost of the system.
3. In the discussion of “Rationales for Free Allocation and Auctioning” (page 9), the report briefly alludes to the importance of effective price discovery for development of a successful environmental trading system. Price discovery depends critically upon many factors, including market liquidity, and can be particularly critical in the early stages of market development. As the report suggests, both auctions and free allocations, with subsequent trading through secondary markets, in practice provide effective mechanisms for providing market liquidity and facilitating price discovery. Some programs have justified the use of auctions for just these purposes, such as the U.S. SO<sub>2</sub> allowance trading system, but their value for price discovery has proven to be limited or non-existent.

The report suggests that “auctioning provides a better signal of firms’ costs of abatement than does free allocation” (page 9.) This statement is misleading, since it ignores the fact that trading under a free allocation provides the price signal in question. The fact that updating auctions may raise the marginal cost of emission reductions by eliminating incentives for certain kind of emission reductions (that is, those achieved by end users due to the higher cost of energy and energy-intensive goods) is irrelevant to the value of the information of “firms’ costs” to the market participants in an emissions trading market. Further, concerns about the potential for updating allocations to alter these incentives are a function of this allocation approach, not the choice between auctions and free allocations *per se*.

4. In the discussion of “Fuel-Substitution and Opportunities for Process Change” (page 20), the report should provide more details on the underlying assumptions in the reported table describing the “flipping points” between coal and natural gas. In particular, the report should note whether the table reflects short-run costs representing only marginal costs or long-term costs representing all up-front and capital costs. In either case, the limits to this analysis within the California context might be noted to be sure that conclusions are not taken out of context (for example, limits on excess coal capacity and other California regulations affecting future purchases of incremental coal-fired power).
5. In the discussion on “Developing New Technologies” (page 20), the EAAC should consider distinguishing between two implications of a cap-and-trade system for incentives to develop advanced, low-GHG technologies: (1) a cap-and-trade system would provide increased incentives for research and development into advanced technologies; and (2) the level of such investment may not be optimal due to information spillovers that limit an innovator’s ability to capture all of the value of their innovations. Consequently, even with a cap-and-trade system, funding of

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<sup>4</sup> See, Schatzki, Todd and Robert N. Stavins, “Addressing Environmental Justice Concerns in the Design of California’s Climate Policy,” October 2009.

research and development to offset this separate market *failure* may be economically efficient. It may be helpful to expand discussion of these knowledge spillovers in later sections addressing “Rationales for Investment” (page 43) and “Investment in New Technologies” (page 46).

6. In the discussion of “Linkage with Larger CO<sub>2</sub> Markets,” the report should note that allowance prices in California may either rise or fall when linked with other cap-and-trade systems, depending on the relative marginal abatement costs present in the various systems. As the draft suggests, if the allowance price is lower in the other region than in California, linkage will result in allowances flowing to California and a reduction in California’s allowance price. However, if the allowance price in the other system is higher than California, linkage will lead the allowance price in California to rise, as low cost allowances flow from California to the other region.
7. The discussion of the “Availability (and price) of CO<sub>2</sub> Offsets” states that the “WCI guidelines propose [that] up to 49% of total allowance requirements could be procured through offsets” (page 21.) In fact, the WCI recommends that jurisdictions “limit the use of offsets ... to no more than 49% of the total *emission reductions* from 2012-2020.”<sup>5</sup> (emphasis added) WCI and CARB have subsequently clarified their interpretation of this language, indicating that the use of offset credits would be limited to 49% of the difference between *actual* GHG emissions for capped sectors in 2012 and the 2020 emission target for these capped sectors. In fact, based on CARB calculations, this would reflect only 3.99% of total allowances! In 2020, this would reflect 15.2 MMTCO<sub>2</sub>-e of out the total 2020 cap of 365 MMTCO<sub>2</sub>-e.<sup>6</sup>

In contrast to these figures, the report notes that “many California stakeholders view this limit as too high.” Given the nature of the report, this comment seems totally out of place. But, if it is included in the final draft, the report should note that many other stakeholders believe that the limit is too low or that it is unnecessary to have any limit at all so long as there are appropriate standards for certifying offset credits.

8. The discussion of “Range of Allowance Prices” concludes that “Based on the studies summarized here, it appears allowance prices on the lower end of the range are due to the use of complementary policies to assist a cap-and-trade program in reducing emissions, the use of emission offsets, and the inclusion of California in a larger WCI-wide policy.” The EAAC should consider some key clarifications of this statement. First, complementary policies and use of offset credits necessarily lower allowance prices. Quantitative modeling can provide some indication of the potential reduction in allowance prices and costs. But while offset use always lowers program costs, complementary policies may raise the total cost of the achieving AB 32 goals if, as illustrated in Figure 2, they displace less costly emission reductions that would occur under the cap-and-trade system. This is an extremely important point that should be emphasized in the committee’s report, in our opinion.

A larger WCI-wide policy could either raise or lower allowance prices within California. This distinction may be worthwhile elaborating, particularly because the only reported results that directly assess the implications of a WCI-wide policy consider activity only in the electricity sector (i.e., Palmer et al.’s Haiku modeling). Thus, the implications of a WCI-wide policy for allowance prices in California are subject to significant uncertainty, whereas use of offset credits most certainly lower allowance prices.

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<sup>5</sup> Western Climate Initiative, “Design Recommendations for the WCI Regional Cap-and-Trade Program,” September 23, 2008.

<sup>6</sup> <http://www.arb.ca.gov/cc/capandtrade/meetings/121409/capcalc.xls>.

9. In the discussion of “Prevention of Adverse Impacts on Industry,” the draft report states that (page 33):

The intent to compensate the owners of a firm for the loss in the firm’s value with grandfathering runs up against other potential program objectives, for example the desire to lessen the impact on residents of California, and to help the state prepare for the emerging global economy.

This statement needs to be clarified. In so far as it suggests that there is a limited and fixed amount of allowance value to be allocated, distribution to any given use would mean less value to allocate to other uses. Hence, this statement would hold for any potential use, not only compensation to firms. (A similar comparison is made in the section on “Dividends to the Public” where it is stated that “...dividends forego possible gains from using auction revenue to achieve deeper GHG emission reductions in locations with high co-pollutant burdens.”)

However, other than diminishing the allowance value available for other uses, distribution of allowances to firms is *not* inconsistent with other AB 32 policy goals, and may support such goals to the extent that such allocations provide benefits to the owners of firms (as direct owners, shareholders, and participants in pension plans) and provide capital to California’s businesses to help them adapt to the new market conditions created by AB 32.

10. In the discussion of “Prevention of Adverse Impacts on Industry,” the report discusses the risk that emissions leakage may arise if reduced output in California in response to AB 32 policies is offset by increased output (and emissions) outside the state. The draft report raises important concerns regarding leakage and identifies measures to mitigate the potential degradation of the environmental integrity of the cap-and-trade system. We will be providing the EAAC with additional comments on leakage at a later date.

One particular recommendation is to expand the report’s discussion of the design of mechanisms to address leakage risks to avoid an incomplete or misrepresentative discussion. For example, the current draft report suggests that an output-based updating mechanism could be benchmarked to industry “best practices” to create an incentive for firms to reduce emissions. In fact, any updating mechanism based on a pre-determined formula (or a formula that is adjusted only periodically) will provide incentives for firms to reduce emissions. However, the choice of benchmark has other implications. For example, a formula benchmarked to an average industry emission rate would fully offset firm’s allowance costs, on average, whereas a formula based on industry “best practices” only partially offsets these costs. A fuller discussion of these options would provide an opportunity for a clearer assessment of these tradeoffs

11. In the discussion of “Compensation,” readers will benefit from the quantification of potential consumer and business impacts. Some of the studies referenced in the report’s earlier table summarizing allowance price estimates also provide estimate of changes in household, business, and industry fuel costs.<sup>7</sup> In lieu of aggregating such modeling results, Table 1, below, provides estimates of the carbon costs associated with different types of energy. Although actual changes in market prices or rates would differ from these values depending on the supply and demand responses to the introduction of the new costs, they may provide useful information to EAAC as it develops its recommendations and to CARB as it makes its rulings.

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<sup>7</sup> For example, *see* Table B-16 in WCI, September 23, 2008.

**Table 1**  
**GHG Allowance Costs Associated with Different Types of Energy and**  
**Alternative Assumptions Regarding Allowance Prices**

Type of Energy	Current Prices (November 2009)	Units	Allowance Costs per Unit of Energy (Percent of November 2009 Energy Price)					
			\$20/Metric Ton of CO <sub>2</sub>		\$60/Metric Ton of CO <sub>2</sub>		\$100/Metric Ton of CO <sub>2</sub>	
<b>Electricity</b>	13.35	cents per kWh	1.27	(10%)	3.81	(29%)	6.35	(48%)
<b>Gasoline</b>	\$2.65	per Gallon	\$0.18	(7%)	\$0.53	(20%)	\$0.89	(33%)
<b>Diesel</b>	\$2.67	per Gallon	\$0.20	(8%)	\$0.61	(23%)	\$1.02	(38%)
<b>Natural Gas</b>								
Industrial	\$0.44	per Therm	\$0.11	(25%)	\$0.32	(74%)	\$0.54	(124%)
Commercial	\$0.94	per Therm	\$0.11	(11%)	\$0.32	(34%)	\$0.54	(57%)
Residential	\$1.53	per Therm	\$0.11	(7%)	\$0.32	(21%)	\$0.54	(35%)
<b>Allowance Costs Associated with Average Annual Household Energy Use</b>								
Electricity (6,952 kWh per year)			\$88		\$265		\$441	
Natural Gas (474 Therms per year)			\$51		\$154		\$256	

**Notes:**

**Allowance Prices:** Allowance prices of \$20, \$60 and \$100 per MTCO<sub>2</sub>-e are chosen as illustrative of potential future allowance values.

**CO<sub>2</sub> emissions:** Allowances costs for gasoline, diesel and natural gas reflect each fuel’s carbon content. Actual impacts of allowance prices on market prices for these fuels may differ from these estimates due to a variety of factors, such as the pass-through of allowance costs to customers in competitive markets. Allowances costs for electricity reflect an estimate of the marginal emission rate for electricity generation in California of 635 g CO<sub>2</sub> per kWh. This emission rate is consistent with a utility procuring all of its power through the organized wholesale market, although it does not account for variation in the quantity of those purchases across hours of the year, of changes that carbon policy might have for other electricity wholesale markets (e.g., ancillary services and capacity.) Impacts on actual utility customers will depend on other factors, such as the relationship between wholesale market prices and long-run procurement costs and the impact of utility-owned assets on regulated rates.

**Current Prices:** Energy prices reflect prices in November 2009 for gasoline and diesel, August 2009 prices for natural gas, and average rates through July 2009 for electricity. Source: EIA.

12. We agree with several important points in the EAAC’s discussion of the “Environmental Compensation,” including the conclusion that “For the state as a whole, AB 32 will reduce not only GHG emissions but also various “co-pollutants”, and the recognition that CARB already conducts “robust environmental and environmental justice assessments” of its regulatory actions (along with the existing set of criteria and toxic regulations that will remain intact and unaffected by AB 32 and the cap-and-trade system, in particular.) The report proposes that “If the ARB finds increased co-pollutant burdens in some communities, a share of allowance value could be allocated for compensation to these communities (with commensurate reductions in the share of allowance value allocated to other uses).” While such a policy may be appropriate for a variety of reasons, it should be recognized that any future increases in co-pollutants in particular communities could be the result of many different market and regulatory factors, of which AB 32

policies is only one of many. In other words, the above quote might be revised to read, “If the ARB finds increased co-pollutant burdens in some communities as a result of AB 32 implementation, a share ...”

13. The discussion of “Rationales for investments” notes that one of three rationales for investments is that “investment in GHG reductions now can help avoid the greater cost of more dramatic reductions later.” Of course, the opposite is also true – that is, investment now can be unnecessarily costly given the time-value of money (i.e., discounting), technological advances, and other factors. In fact, an important benefit of a cap-and-trade system with banking and borrowing is its ability to cost-effectively achieve emission reductions over time by providing the market with the flexibility to determine *when* to achieve emission reductions. By contrast, use of allowance value to “avoid the greater cost of more dramatic reductions later” presumes that government administrators can collect the necessary information and effectively allocate funds to the investment opportunities that will cost-effectively achieve emission reductions over time. This seems to us to be an unreasonable assumption.
14. In the discussion of “Investment in Disadvantaged Communities” (page 48), to the extent that CARB uses allowance value to target disadvantaged communities, it should consider measures that are likely to be most cost-effective in mitigating economic and public health conditions in these communities. Such measures may extend beyond support for “reductions in emissions of GHGs and co-pollutants, investment in adaptations to climate change, and other environmental improvements in disadvantaged communities” (page 48.) Also, the report notes that “An additional source of revenue for CBFs could be created by introducing a co-pollutant surcharge on GHG emissions in communities heavily burdened by air pollution, a step that would also strengthen incentives for emission reductions in these locations.” As we have stated previously, such surcharges are unlikely to be a cost-effective approach to delivering reductions in co-pollutants to adversely affected communities.<sup>8</sup> However, regardless of the merits of such a proposal, it appears out of place in the context of the report’s focus on the initial allowance allocation, rather than the overall design of AB 32 policies.

We thank the EAAC for the opportunity to provide our comments on its draft Allocation Report and look forward to subsequent drafts, including the EAAC recommendations to CARB.

Sincerely,

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<sup>8</sup> Schatzki and Stavins, October 2009.