

To: Steve Church, Research Division, California Air Resources Board

From: Judson Jaffe, Analysis Group, Inc.

Date: November 27, 2007

Re: Comments on the November 15, 2007 Economic and Technology Advancement Advisory Committee (ETAAC) Report Discussion Draft

The Economic and Technology Advancement Advisory Committee (ETAAC) should be commended for many of the contributions made by its draft report. However, while the report offers a number of important insights and perspectives, there are a few significant problems with the draft that should be addressed before the report is finalized:

- First, the report appears to endorse the use of a “market maker” to actively manage allowance prices in a prospective Californian cap-and-trade system, instead of the use of a price-based cost containment measures, such as a safety valve. The report’s assessment of the advantages and disadvantages of these alternative approaches is incomplete and, in some respects, flawed. As a result, its arguments in favor of the market-maker approach are far from compelling. This suggests the need for much more careful consideration of this issue before any firm recommendations are made.
- Second, the report makes some statements about the implications of the design of a cap-and-trade system that are incorrect from an economic perspective. These statements should be removed from or corrected in the final report.

Below, I offer a more detailed discussion of each of these issues.

The ETAAC report appropriately emphasizes the importance of putting a price on emissions. As both the ETAAC and the Market Advisory Committee (MAC) describe, to cost-effectively reduce greenhouse gas (GHG) emissions, a price should be placed on emissions from as many Californian emissions sources as is practicable. By establishing this price, California will create a powerful and consistent state-wide incentive for emission reductions and for emissions-reducing innovation. Given the importance of this price signal, an economy-wide cap-and-trade system should play a central role in the implementation of AB 32. Such a system can establish a consistent price signal to encourage emission reductions from sources that have accounted for more than 80 percent of California’s GHG emissions in recent years.¹

The use of a market maker to actively manage allowance prices in a cap-and-trade system needs to be more fully considered before being recommended. The ETAAC report importantly recognizes that a market for GHG emission allowances “could benefit from a fast-acting cost containment mechanism that could address price volatility in a timely fashion.”² To address this need, the ETAAC report recommends a Carbon Trust that would, among other things, actively manage the allowance prices in a prospective Californian cap-and-trade system. The concept of a Carbon Trust is an important contribution to the policy debate in as much as it seeks to introduce additional environmentally-neutral

¹ See Market Advisory Committee, California Environmental Protection Agency, *Recommendations for Designing a Greenhouse Gas Cap-and-Trade System for California*, June 30, 2007.

² ETAAC Draft Report, p. 8-7.

means of reducing cost uncertainty. However, at this point, it is not at all clear that the proposal for active management of the carbon market by a “market maker” is preferable to the alternative of establishing transparent (and hence more predictable) mechanisms to control allowance price volatility, such as a safety valve. Thus, the use of any such market maker requires substantial further study to determine whether it would be desirable.

Many of the ETAAC report’s arguments in favor of using a “market maker” instead of a price-based safety valve do not withstand scrutiny, suggesting the need for much more thorough consideration of the advantages and disadvantages of alternative cost containment measures.

- **Implications for early action.** The ETAAC report states that a “price-based safety valve would reduce incentives for early action by eliminating one reason to undertake early reductions: the threat of unusually high prices for mitigating GHG emissions in the future.”³ As long as the safety-valve “trigger price” is set at a sufficiently high level, there will still be an incentive for early action to reduce the threat of unusually high prices underneath that trigger price. Thus, a safety valve does not “eliminate” such an incentive, it simply reduces that incentive. Moreover, the degree to which it reduces this incentive depends on how high the trigger price is. Therefore, in evaluating the case for a safety valve, one must weigh the “cost” of that reduced incentive against the benefit that the safety valve offers in the form of protecting against unacceptably high allowance prices and the associated economic disruptions.
- **Implications for innovation.** Contrary to the suggestion of the ETAAC report, a safety valve can actually bolster the incentive for innovation. In considering the implications of a safety valve, it is essential to recognize that it only has *any effect* if allowance prices rise to the level of the safety-valve trigger price. Therefore, in considering the safety valve’s implications, it is essential to compare those implications against what would happen if the safety valve were not in place and allowance prices rose above that trigger price. A real possibility is that such high allowance prices would lead to temporary suspension of a cap-and-trade system or other adjustments that may jeopardize the value of investments in emission reduction measures. By keeping allowance prices from reaching levels that could lead to such outcomes, a safety valve can actually increase incentives for innovation. It can do so by giving the business community the confidence that price signals from the cap-and-trade system will remain in place even if meeting California’s emissions targets turns out to be more costly than anticipated. Were California to instead establish a market maker, this may adversely affect incentives for innovation if there is uncertainty about how that market maker would respond to unexpectedly high allowance prices.
- **Implications for price signals.** Unless a market maker employs a mechanism much like a price-based safety valve, its interventions in the market would not necessarily be “better able to smooth allowance prices,”⁴ as compared with a safety valve. As is the case in the market for oil and electricity, it is reasonable to expect that small changes in the available supply of GHG allowances may lead to significant changes in allowance prices. Therefore, if in response to unexpectedly high prices, a market maker increases the supply of allowances and credits in the market (such as by offering to sell additional emission reduction credits), such action could unintentionally lead to equally large price adjustments in the opposite direction, causing prices to collapse. By contrast, were a safety valve to be exercised in response to unexpectedly high allowance prices, it would only prevent prices from rising to higher levels. It would not introduce any risk of “overcorrecting” and bringing about a collapse in prices. In this respect, a safety valve may offer more stable price signals than an active market maker.

³ ETAAC Draft Report, p. 8-8.

⁴ *Id.*

In commenting on the implications of various elements of the design of a cap-and-trade system for early action and innovation incentives, the ETAAC report should clearly state that there is an optimal amount of early action, and an optimal level of incentives for innovation. Neither early action nor innovation incentives should be pursued at any cost. Such an acknowledgement is missing from, but could beneficially be included in Section 8.1, where the report discusses the rationale for its focus on the effects of a cap-and-trade system’s design for early action and innovation incentives.

- California’s contribution to mitigating global climate change will depend on how its policies reduce California’s cumulative emissions over decades, not on how those policies reduce emissions in any one year. Therefore, early action emission reduction measures should only be sought if they are less costly (or provide greater *non-climate-related* benefits) than emission reduction opportunities that are available in later years. Otherwise, California will needlessly increase the cost of reducing its cumulative GHG emissions. In discussing allowance borrowing, the ETAAC’s statement that “unrestricted borrowing would provide a strong disincentive for early action” suggests a failure to differentiate *desirable* early action from *undesirable* early action. Borrowing *will not* discourage early action measures that are less costly than emission reduction opportunities in later years. It will only discourage early action measures that are unnecessarily costly, given future opportunities to reduce emissions at lower costs. In light of this apparent confusion, Section 8 of the report should be revised to acknowledge that there is an optimal level of early action, and it should evaluate design elements according to their ability to promote only that early action which is cost-effective.
- There is also an optimal level of incentive for innovation. The more costly a policy is (or is expected to be) the greater the incentive will be for cost-reducing innovation. But, of course, a balance must be struck between providing incentives for innovation and avoiding unnecessary costs. The ETAAC report acknowledges this tradeoff in discussing the effect of offsets on innovation incentives, but the discussion of this tradeoff should be expanded and brought forward to Section 8.1.

Certain statements about the implications of allowance allocation methods for early action, innovation, and price signals need to be corrected. Others need to be put in better context. Some of the statements in the ETAAC report regarding the implications of allowance allocation methods are incorrect. Moreover, in choosing a method for allocating allowances, there are numerous potentially competing policy objectives that policymakers may wish to consider. To better inform policymakers about the tradeoffs that particular allocation approaches may present, the ETAAC report should give some indication of the economic significance of any benefits that particular allocation approaches may offer with respect to promoting early action and innovation, or providing clearer price signals.

- ***Implications for early action.*** The ETAAC report incorrectly suggests that all free allocation methods “do nothing to encourage early action.”⁵ To the contrary, free allocation methods can provide the same incentives for early action as does auctioning. A firm faces the same incentive to undertake an early action measure regardless of whether that measure allows it to reduce the number of allowances it must buy (as under an auction), or increase the number of allowances in its possession that it can sell (as under a free allocation). While the firm faces the opportunity to avoid a cost in the former case, and to earn additional revenue in the latter case, the monetary value of the incentive is the same in both cases.

Relative to an auction, free allocation of allowances will only reduce incentives for early action if the adopted approach bases allocations directly or indirectly on a firm’s *future* emissions (or other related factors). In such a case, a firm undertaking an early action measure that reduces its future

⁵ ETAAC Report, p. 8-3.

emissions may be penalized by a reduction in its allocations. By contrast, if free allocations are based on a firm's emissions (or estimates thereof) in a past year (e.g., 2005), early action measures will not affect the allocations that firms receive. Under such a grandfathering approach, firms will have the same incentive to undertake early action measures as if allowances were auctioned.

In considering the implications of allocation approaches for early action incentives, contrary to what is suggested in the ETAAC report, the key issue is not whether allowances are freely distributed or auctioned. Rather, the key issue is whether allocations to each firm will be influenced by a firm's future emissions levels, such that early action measures from this point forward may be "penalized" by a smaller allocation. While some free allocation approaches may create this undesirable penalty, many others (including many types of grandfathering approaches) do not. As a result, many free allocation approaches, including grandfathering, will create the same incentives for early action as does auctioning.

- ***Implications for innovation.*** Both auctioning and free allocation of allowances provide incentives for innovation. In the former case, innovations reduce the number of allowances that a firm must purchase. In the latter case, innovations increase the number of allowances that a firm can sell. On the margin, the incentive for innovation created by free allocations may be less than that created by auctioning if a firm believes that bringing an innovation to market will reduce the price of allowances. In such a case, if a firm has received allowances, the innovation would reduce the value of those allowances, diminishing the incentive for innovation relative to what would exist under auctioning. However, the significance of the difference in incentives provided by auctioning and free allocation depends fundamentally on the specific circumstances, including, among other factors: the type of innovation; how large the allowance market is; to whom allowances are allocated; and how many allowances are allocated. Given that there may be other reasons to prefer free allocations over auctions, such as distributional considerations, the ETAAC report should describe the ETAAC's assessment of the economic significance of the difference in incentives provided by auctioning versus free allocation, or it should acknowledge that the economic significance of this difference is unknown.
- ***Implications for clear price signals.*** The ETAAC report suggests that "some amount of auctioning is necessary for establishing a clear price signal."⁶ Contrary to this suggestion, experience with the EU Emissions Trading Scheme suggests that a clear price signal for allowances can emerge with little if any auctioning. Thus, the ETAAC report should acknowledge that while auctioning can contribute to price discovery, it is not necessary for establishing clear price signals. A liquid allowance market can bring about clear price signals even if all allowances are freely allocated.

The ETAAC report's recommendations regarding offsets suggest a significant misunderstanding of how a multi-sector cap-and-trade system would function, and are inconsistent with the ETAAC's support for a cap with the broadest possible scope of coverage. Elsewhere in its draft report, the ETAAC appears to support a multi-sector cap-and-trade system in which trading is allowed across sectors, such that one common allowance price emerges. It is this common allowance price that places a price on emissions and thereby creates *the same incentive* for all firms subject to the cap to undertake any emission reductions that are less costly than that price. Likewise, it is this price that creates the same incentive for innovation across all sectors. The cost-effectiveness of a multi-sector cap-and-trade is fundamentally tied to the fact that every sector faces the same allowance price. If allowance prices differ across sectors (e.g., due to restrictions on inter-sector trading), some sectors would undertake emission

⁶ ETAAC Draft Report, p. 8-4.

reductions that cost more than opportunities that remain untapped (because of lower allowance prices) in other sectors. This would increase the cost of meeting state-wide emission targets.

However, in discussing potential restrictions on the use of offsets in a cap-and-trade system, the ETAAC report states that “[l]imits on offsets are ... useful for encouraging innovation within specific capped sectors”; and that “[a]ny limits on offsets should ... vary by sector based on ... each particular sector’s ability to innovate and reduce GHG emissions.”⁷ These statements regarding potential sector-differentiated limits on offset use suggest a desire to create differentiated incentives for emission reductions and innovation across sectors. This runs counter to the ETAAC’s apparent support for a cost-effective multi-sector cap-and-trade system. Perhaps more importantly, these statements suggest a significant misunderstanding of how a cap-and-trade system encourages emission reductions and innovation.

Regardless of how few or how many offsets an individual firm uses, its incentive to reduce its current emissions and its incentive for innovation to reduce future emissions will be determined by the allowance price that the firm faces. It is this allowance price that determines the cost of the firm’s remaining emissions, and therefore the incentive for undertaking emission reduction measures or for investing to reduce future emissions. If a firm has emission reduction measures available to it that cost less than that allowance price, it will undertake those emission reduction measures regardless of whether or not it also uses offsets. Therefore, as long as two firms face the same allowance price because they are in the same cap-and-trade system, even if one firm is allowed to use offsets and the other is not, they will both have the same incentive to reduce their remaining emissions and to invest in future reductions. This is because they will both face the same price for any emissions that remain unabated. The different rules about each firm’s offset use will not lead to a difference in their incentives for emission reductions and innovation.

The only effect that the use of offsets can have on individual firms’ incentives for emission reduction and innovation is through the effect of those offsets on the *system-wide* allowance price. In turn, the effect of offsets on this allowance price depends on the total use of offsets throughout the *entire* cap-and-trade system, not on any one firm or sector’s use of offsets. For example, at the extreme, if one firm were prohibited from using offsets and all other firms were allowed unlimited use of offsets, this would have no impact on the allowance price throughout the cap-and-trade system. This restriction would just affect who uses offsets, not how many offsets are used. As a result, because the firm would face the same allowance price with or without the prohibition on its use of offsets, it would face the same incentives for emission reductions and innovation with or without the prohibition; and it would face the same incentives for innovation as would all other firms under that system.

If California adopts a cost-effective cap-and-trade system in which inter-sector allowance trading is permitted, which the ETAAC seems to support, it would be illogical to develop sector-specific limits on the use of offsets. Such limits would only affect incentives for innovation through their effect on the system-wide allowance price faced by *all firms* subject to the cap. Thus, these limits *would not* create differentiated incentives for innovation that “vary by sector based on the ability of each particular sector’s ability [*sic*] to innovate and reduce GHG emissions.”⁸ If California wishes to place limits on offsets to increase allowance prices (and to therefore increase incentives for innovation) *throughout* a multi-sector cap-and-trade system, careful consideration should be given to both the costs and benefits of system-wide limits on offset use. However, there would be absolutely no advantage or meaningful effect associated with establishing sector-specific limits.

⁷ ETAAC Draft Report, p. 8-5.

⁸ *Id.*

The ETAAC report’s apparent recommendation to set geographic limits on the source of offsets fails to give any consideration to the cost of such limits. Climate change is a global problem, and emission reductions will have the same beneficial effect of mitigating climate change regardless of where in the world they occur. Therefore, from the perspective of mitigating climate change, California’s efforts to reduce GHG emissions will be equally effective regardless of whether those reductions are achieved in or outside of California. Limiting offsets to only in-state sources will necessarily increase the cost of reducing GHG emissions by foreclosing opportunities to undertake low-cost emission reduction measures beyond state boundaries. While the ETAAC report cites various benefits of placing geographic limits on offsets, it fails to acknowledge the cost of such limits. The final report should offer a balanced assessment that acknowledges that any geographic limits will have both benefits *and costs*, and that it cannot determine whether the benefits of such limits outweigh their costs.

Contrary to the ETAAC report’s suggestions, limits on offsets do not offer any meaningful benefits with respect to providing clearer price signals. As the ETAAC report correctly notes, restrictions on offsets will increase the cost of meeting California’s emissions targets, and thereby increase allowance prices in a cap-and-trade system. However, the report seems to suggest that such limits are beneficial because they “help reveal the true cost of GHG emissions reductions within each capped sector of the economy.”⁹ With or without limits on offsets, an allowance price will emerge and each sector will respond by undertaking those emission reductions that are less costly than the allowance price. Restrictions on offsets will only affect the level of that allowance price and resulting emissions in each sector. Regardless of their level, prevailing allowance prices and the resulting emissions in each sector will reveal the cost of emission reductions within each sector. Of course, different allowance prices will reveal the cost of achieving different levels of emission reductions, but it is not at all clear why it would be beneficial to limit offsets and thereby increase costs to the California economy simply to reveal the cost of achieving a greater amount of emission reductions within particular sectors than would be achieved if offset use were unrestricted.

⁹ ETAAC Draft Report, p. 8-6.