



**ENVIRONMENTAL DEFENSE**

finding the ways that work

April 2, 2008

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Re: Comments for AB32 Economic Analysis Technical Stakeholder Working Group

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Dear Mr. Kennedy,

Thank you for convening meetings on January 28<sup>th</sup>, February 29<sup>th</sup> and March 17<sup>th</sup> to gather stakeholder input for economic analyses being conducted in support of Scoping Plan development for AB32, California’s Global Warming Solutions Act. On behalf of Environmental Defense Fund’s (EDF) 100,000 California members and more than 500,000 members worldwide, this comment letter documents several issues with the intent of moving forward constructively. It is organized into several sections, and includes responses to the four allocation questions posed for the March 17<sup>th</sup> workshop. While this letter provides detailed recommendations for a modeling protocol document, scenario and sensitivity analyses, cost-effectiveness metrics, and allocation methods, three point merits highlight:

- There is a need for a modeling scenario that shows the potential of an economy-wide cap-and-trade policy to keep compliance costs low. The scenario ought to be at the California state (not regional) spatial scale, should include transportation fuels within the cap, and should allow for banking, borrowing and offsets.

- Following upon the modeling studies in Summer 2007, ARB ought to encourage the conduct of corroborative modeling. Comparing results from many modeling studies will build confidence in results that converge, and will provide clues about why different models produce different results.

## Modeling Protocol

Fluid collaboration between stakeholders, agency staff and consultants will be facilitated by written materials that describe modeling plans, including the interactions of various modeling platforms, important assumptions and how those assumptions will be adjusted in scenario and sensitivity analyses. Detailing modeling output formats and informational content will also be quite helpful to analysts who wish to conduct “add on” studies using the results of ARB modeling as a starting point. For lack of a better term, I will refer herein to the written narrative as a Modeling Protocol.

Early input from stakeholders about both what should be in the protocol document and the decisions it should codify is paramount to proceeding collaboratively. Should protocol decisions be made without early input from stakeholders, we risk the chance of the modeling methods, scenarios or sensitivity studies diverging from or missing altogether broad stakeholder interests and, at the end, resistance to findings no matter how rigorously developed and communicated. With the goal of mutual ownership of both research methods and results, I encourage ARB to provide a comprehensive protocol as soon as possible. Though timelines are short, the protocol will be most helpful if made available well in advance of the conduct of modeling to allow for redirection or refocus following stakeholder input and before irreversible analytical decisions are made. Topics and issues that would be useful to address in the protocol include:

- Who’s doing what? ICF International, E3 and ARB are conducting modeling and relying on an iterative, interactive process that remains unclear to me. How are the myriad efforts informing each other? In addition, Charles River Associates has been mentioned as contributing analytically. How are these efforts contributing to the findings to be presented by ARB in support of the Scoping Plan?
- What are the timelines for the modeling process, and when will be the times for stakeholder input?
- Similar to the graphic presented at the February workshop, a schematic and narrative explaining model uses and interactions (via shared assumptions, and inputs and outputs)
- A discussion of each model’s analytical abilities and limitations
- Treatments of influential macroeconomic assumptions, such as the nominal and real discount rates, baseline GDP and population growth rates, the net economic effects of energy efficiency investments, the rate of new technology innovation and integration, as well as a discussion of the rationale for each value (or range) to be used.
- GHG mitigation strategies to be or not to be modeled.
- Variables to be adjusted to derive scenarios for analysis
- Variables to be the basis for sensitivity analyses

In developing modeling documentation, several principles will be useful to keep in mind:

- The corroborative modeling approach used in the initial AB32 macroeconomic studies is a wise method for assessing the consistency of findings across modeling approaches.

Corroborative modeling is a very useful way to examine modeling uncertainty, though it does not identify errors common to all modeling platforms. It is not clear that such corroboration will be part of the planned effort. Modeling in parallel provides results that may be compared for general assessments of uncertainty, which is a different and more useful approach than sequential modeling that yields one set of results.

- Independent studies may build on the results of ARB-sponsored work, so it will be useful to design modeling toward providing output data that can be used by others. For example, it will be useful to provide estimates of co-pollutant emissions changes relative to the reference case for each modeling scenario. Also useful will be an estimate of health and welfare costs avoided by co-pollutant emissions reductions.
- The proper treatment of energy efficiency remains hotly debated. It will be helpful for ARB to detail the debate and explain the method chosen by ARB.

In addition to adhering to the above principles, there will be considerable value in developing a stable of disinterested scholars to review the protocol and to weigh in on debates about modeling methods, input assumptions, and ways to present outputs. Third-party/peer review will be quite useful for exploring criticisms of both method and findings.

### **Scenarios for Analysis**

The macroeconomic analyses completed by ARB in 2007 for AB32 provide a useful indication of the types of scenarios to be analyzed in support of the Scoping Plan. Recent regulatory and legislative actions ought to be incorporated into the baseline and scenario, including:

- Baseline effects of the Federal energy, vehicle efficiency and fuels legislation
- Several rules pertaining to diesel fuel engines and fuel
  - o On and off-road heavy duty diesel engine and fleet standards
  - o Harbor craft and intrastate locomotive fuel and fleet standards
  - o Low-sulfur diesel fuel for vehicles, off-road equipment and auxiliary ship engines
  - o 2005 California Rail MOU
  - o Transportation refrigeration units
  - o Diesel truck idling limits
  - o Cargo handling equipment at ports and intermodal rail yards
  - o Cold ironing (shorepower) regulations
  - o Drayage truck fleet standards

Also significant to represent are the anticipated fuel and fleet rules for ocean-going vehicles and private diesel trucks anticipated to be adopted in Summer and Fall 2008, respectively. Together, these many rules will have a significant impact on co-pollutant emissions, and coincidentally on greenhouse gas emissions. It is important to describe accurately conditions of communities burdened with high levels of toxic and criteria air pollution, both in the baseline and scenarios, since excluding these many important fuel and fleet rules would paint a much "dirtier" future picture than can reasonably be expected in all scenarios. It would also have the consequence of indicating erroneously GHG mitigation costs that will be avoided through implementation of these new regulatory developments.

In addition to a revised baseline, there is need to study several important and controversial design dimensions for AB32 compliance strategies. One level of policy design pertains to the role of

cap-and-trade policy relative to performance or technology standards, taxes or some combination thereof. In modeling cap-and-trade several key features must be represented to accurately depict the mitigation costs and economy-wide impacts, in particular banking, borrowing and offsets

Two notable design features are banking and borrowing because they offer great promise to significantly reduce compliance costs. Though ARB has indicated that offsets will be modeled eventually, I highlight the need to fully explore offsets since it is another cost-minimizing feature of cap-and-trade.

A cap that is inclusive of many sectors of the economy will provide more within-cap options for reductions, thereby lowering overall compliance costs. Similar to representing banking, borrowing and offsets, modeling transportation fuels within a state cap-and-trade is of paramount importance. It is concerning that only a regional-scale scenario will represent transportation fuels within the cap. To the extent analytically feasible, all scenarios should be modeled at state and regional scales to facilitate apples-to-apples rather than apples-to-orchard comparisons.

### **Spatial Scale and Localized Impacts Assessment**

It is useful to study the economic impacts of various compliance scenarios at a statewide scale. However, it is also important to understand the community-scale implications of the mix of policies chosen, as well as the design of specific policies, notably cap-and-trade. It appears that modeling will provide very limited ability to draw conclusions about the community protections requirements of AB32.

The community protections language written into AB32 will require explicit study of the extent to which policy options disproportionately burden and benefit environmental justice communities. Unfortunately, state-level analyses will have limited applicability to the assessment of economic and environmental impacts at the community scale. It is important for ARB staff to tackle this challenge directly and aggressively by contracting with analysts capable of developing rigorous, disinterested conclusions about how specific policy design options will impact environmental justice communities. Secondly, ARB can facilitate independent assessments by generating modeling output that is useable by other analysts who want to use “bottom up” techniques to analyze community-scale risks.

I realize that community-scale modeling is yet another challenge for the very busy ARB team, and that input data may be insufficiently resolved, but this reality does not allay the need for rigorous conclusions about community-scale impacts of various policy options. Certainly, the members of the Environmental Justice Advisory Committee (EJAC) will pose questions as ARB unveils its Scoping Plan and begins to isolate preferred policy actions. It is wise to plan now to develop findings capable of answering these questions.

### **Sensitivity Analyses**

The Scenario analyses will be quite useful for comparing policy options, but will provide only shrouded information about modeling behavior and input assumption sensitivities. Scenarios will be distinguished by changing several input assumptions in unison, which is a “global sensitivity” analysis. Given the considerable uncertainty associated with macroeconomic modeling, it is important to develop “local” sensitivity studies so we can tease out the important model parameters and debate values to be used for them.

The divergent results of various modeling studies using general equilibrium economy-wide models derive from two key sets of assumptions about the net economic benefits of energy efficiency investments and the rate of innovation and integration of new low-carbon technologies (as well, perhaps, as assumptions about future conventional fuel prices). These are variables worthy of local sensitivity analyses, and exposition in modeling documentation.

Uncertain and/or influential input assumptions may warrant sensitivity analyses, including:

- Net economic benefits of energy efficiency investments
- Rate of innovation and rate of integration of new innovations
- Energy prices, including fuels such as coal, diesel, gasoline and natural gas
- Population growth rates
- Forecasted vehicle miles of travel, including factors exogenous to the model that might dramatically cut private VMTs, as well as endogenous elasticities for VMTs
- Rate of and venue for reinvestment of allowance auction revenue
- Nominal and real discount rates used for calculating present values
- Forecasted business-as-usual growth in carbon emissions
- Portion of compliance that can be met with offsets
- Banking and borrowing rules

### **Allocation of Allowances under Cap-and-Trade**

I appreciate the opportunity to provide responses to four questions posed at the March 17 workshop. In October 2007, EDF opined on this topic in Scoping Plan comments and our comments to the California Energy Commission<sup>1</sup> in October 2007.

#### *What Method Should be Used to Distribute Allowances?*

Generally, EDF agrees with the recommendation in the Market Advisory Committee (MAC) report, as well as the criteria used in that report to evaluate allowance distribution options. Considering transparency, simplicity, fairness, cost-effectiveness, and environmental integrity, EDF concurs with the MAC that auctioning is ultimately the preferred method to distribute allowances. However, in the near-term, there may be some need for administrative allocation.

Recognizing that the direct costs to regulated entities may be higher with an auction, EDF acknowledges that there may be a near-term need to provide for some free allowances or to provide economic relief to entities that will either not be able to pass the allowance cost through to consumers, that may create economic hardship to some low-income consumers if allowance costs are passed through, or may create a competitive disadvantage if entities are in sectors with significant exogenous competition from less progressive regulatory regimes. Should administrative allocation be used as an interim step toward eventual full auctioning, EDF highlights the importance of data accuracy in deliberations on allocation decisions.

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<sup>1</sup> Comments to California Energy Commission Docket #07-OIIP-01 in response to Administrative Law Judges “Ruling Requesting Comments and Noticing Workshop on Allowance Allocation Issues.” October 31, 2007. Rulemaking 06-04-009 (Filed April 13, 2006).

Any decision to administratively allocate or auction emissions should consider impacts on consumers and the diversity of communities throughout the state. EDF supports a position that GHG mitigation with cap-and-trade should not result in further burdening of traditionally disadvantaged Environmental Justice communities.

*How should value of allowances be used?*

Allowance value should be to further the public good. Here again, the MAC report provides a good starting list, as does the report by the Economic and Technology Advancement Advisory Committee. While identifying worthy investments is not difficult, priorities need to be set within the context of the ultimate goals of AB32 to achieve greenhouse gas reductions (and co-pollutant benefits) in a manner that is efficient and equitable, and that maximizes benefits and minimizes costs to Californians. Toward this goal, it is important that low-income communities not be harmed environmentally in terms of air quality or economically via price impacts on energy, food and consumer goods. Generally, refunding allowance revenues may more reliably enforce AB32 goals than administrative allocation because the revenue “refunds” can be conditioned on the recipients taking specified actions, such as investing in emissions reductions that have significant co-pollutant benefits in Environmental Justice communities, or investing in dual benefit programs that both reduce emissions and mitigate regressive economic impacts.

*How to distribute allowances to new entities? How should entities that cease CA operation be treated?*

It is desirable to minimize barriers to entry by new market participants. New entrants should have the same opportunity to acquire allowances as existing participants. Holding auctions at regular intervals, and/or a liquid secondary allowance market, will facilitate the purchase of allowances on timelines that do not new impede market entrants. Administrative allocations are less likely to provide this fluidity or timeliness, and may necessitate “reserving” some allowances for new entrants, or relying on liquid secondary market. As the staff White Paper notes, administrative allocation may result in less trading and, by extension, a less robust secondary market.

With an auction, there is no concern that allowance “rights” (i.e., expectations and precedents from administrative allocations) might inspire an operator to stay in business. With auctions, businesses will sell allowances amongst other assets while liquidating, so it will be easy to enter or exit the market.

Concerns have been raised about third party “marketers” manipulating market prices and/or impeding transactions. Basic features of an effective market – liquidity (i.e., plenty of allowances for sale, high trading volumes), low transactions costs, many buyers and sellers (i.e., non-concentrated market), and complete information – are facilitated by third parties, not threatened by them. Third parties may provide several valuable functions, such as:

- broker transactions
- add to the number of buyers and sellers
- develop financial mechanisms that help regulated entities mitigate allowance price risks and thus enable long-term compliance strategies.

While it is not likely that a national greenhouse gas cap-and-trade will be concentrated, it is not so obvious that California's relatively small market will be impervious to manipulation or liquidity problems. Initial research on this topic by Dr. Lee Friedman at U.C. Berkeley Goldman School of Public Policy indicates that the AB32 allowance market will not be concentrated. Third party operators will contribute to a less concentrated market, but it is nonetheless wise for ARB to explore market design features that minimize opportunities for market manipulation while still seeking cap-and-trade that meets criteria for efficiency, equity, simplicity, transparency and environmental integrity.

#### *How to change allocation method in future years?*

EDF supports the phasing approach suggested by the MAC report unless a full auction and a broad, multi-sector cap can be implemented sooner. Though auctioning is preferred method, some administrative allocation in the near-term is acceptable.

#### **Measures of Cost-Effectiveness**

It is useful to use a broad and accurate definition of the cost effectiveness written into AB32. Recognizing that this topic will receive detailed attention at the May 5<sup>th</sup> workshop, this initial offering may be augmented after May 5<sup>th</sup>. Given that this metric may be at the crux of priority-making, it is prescient begin contemplation of comparing results using an "enlightened" cost-effectiveness metric. Cost-effectiveness is an implicit efficiency metric, so it should be calculated in light of all social costs and benefits. Doing so will include co-pollutant benefits and, arguably, avoided health impacts of these avoided co-pollutant emissions. This would require broadening the simple calculation that is dollars invested in reductions divided by GHG emissions abated. A metric that considers the full range of AB32 goals will include other avoided pollutant emissions, notably NO<sub>x</sub>, SO<sub>2</sub>, PM, and other toxic air contaminants, as well as multipliers to depict proximity of reduction to sensitive receptors and location of reductions in Environmental Justice communities.

#### **Priority Ranking Design Challenges**

Several design challenges were identified during the workshops, and are well summarized in the staff paper. Without questioning the breadth of the list, it is useful to rank the issues in terms of type and scale of risks and opportunities. Several major concerns deserve serious deliberation and representation in modeling. Others are relatively insignificant or highly unlikely, and can be deemphasized. The following must be represented to usefully compare scenarios:

- Banking and borrowing
- California scale multi-sector cap that includes transportation fuels
- Offsets

Workshop comments by representatives of fuel providers in California raised concerns of competitiveness and economic hardship. It may be that competitiveness is a real concern, so it would be helpful for ARB staff to investigate this issue for all sectors likely to be within the cap.

ARB staff are urged to use caution when considering potentially regulated entities' claims of economic hardship due to an allowance auctions. These comments ought to be evaluated using criteria for efficiency, fairness, simplicity and environmental integrity. The hardship concerns also raise the need to increase the precision of the conversation with stakeholders. For example,

it would be useful now to know what industries would not be able to pass the cost of allowances directly to consumers. It would also be useful to know which firms within these economic sectors are particularly threatened, such as vertically integrated municipal utilities. With this information it will be possible to design modeling studies that are better analogs of reality and that help use to determine what policy designs will create the most equitable and efficient system of incentives to move toward a low-carbon economy in California.

Sincerely,

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