



ENVIRONMENTAL DEFENSE FUND

finding the ways that work

August 11, 2008

Mary D. Nichols, Chairman
California Air Resources Board
1001 I Street
Sacramento, CA 95812
(916) 445-5025 (Fax)

RE: Draft Scoping Plan Comments

Dear Chairman Nichols,

Environmental Defense Fund (EDF) applauds the California Air Resources Board (CARB) on the release of the *Climate Change Draft Scoping Plan: A Framework for Change*. The draft Scoping Plan represents an important milestone in California's implementation of the landmark Global Warming Solutions Act of 2006 (AB 32), the first state-level cap on the greenhouse gas pollution that causes global warming.

EDF respectfully submits the following comments in response to the draft Scoping Plan, and looks forward to collaborating with CARB and other stakeholders in the coming months as further materials, including the evaluation supplements, are made available.

Sincerely,

Derek Walker
Director, California Climate Initiative
Environmental Defense Fund

AB 32 draft Scoping Plan General Comments

Overview

The draft Scoping Plan includes a robust, innovative combination of market-based mechanisms and traditional regulatory policies. Among many positive elements contained in the plan, we are particularly supportive of CARB's recommendations for a multi-sector cap-and-trade program and for a 33% Renewable Portfolio Standard.

Developing a cap-and-trade program in California and through the Western Climate Initiative will achieve rapid, cost-effective reductions from the largest emitters of greenhouse gases. The aggressive requirement for renewable power generation will inspire innovation, buoy the economy, and bring about a new cooperative effort among California's elite regulatory agencies.

Notwithstanding these strengths, the draft plan is not yet a complete document. The forthcoming economic and cumulative impact analyses are critical lenses through which we will evaluate the desirability of the various recommended measures. The final plan will also need to better incorporate proven transportation and land use strategies, many of which are outlined in our subsequent comments.

Costs and Benefits

Evaluation of the overall costs and benefits of the policies recommended in the draft Scoping Plan, and of the plan as a whole, is critical. For more extensive information, please see the comments of Environmental Defense Fund submitted in April 2008 (Appendix A) to the AB 32 Economic Analysis Technical Stakeholder Working Group.

While our full evaluation of CARB's macroeconomic analysis is not possible until the supplement is released, we agree with the draft Scoping Plan's conclusion that AB 32 is likely to have a small overall effect on projected growth of the California economy, that any effects are likely to be positive, and that the adoption of AB 32 has already begun to attract considerable job-generating investments in clean technology.

CARB's macroeconomic analysis is unlikely to fully account for the costs of inaction. From wildfires to wildlife habitat degradation, California is already facing the impacts of global warming. Fighting global warming quickly and aggressively, as AB 32 requires will help California avert the most severe social costs of global warming, such as water scarcity, worsened urban air quality, and decline of important industries, such as agriculture in the Central Valley and winter sports in the Sierra Nevada Mountains.

Cost-effectiveness

AB 32 requires CARB to “adopt rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emission reductions” and to “consider the cost-effectiveness of these regulations.” The discussion of cost-effectiveness (pp. 56-57) in the draft Scoping Plan notes that AB 32 provides no criteria to assess whether a measure is cost-effective, and does not prescribe an upper-bound dollar per ton cost beyond which a measure wouldn’t be considered cost-effective.

EDF agrees that low cost (i.e., cost-effective) reductions are a fundamental objective because such efficiency helps to free up resources to accomplish other objectives, and helps to ensure the political success of the program. While cost-effectiveness should be seen as a guiding principle for meeting AB32 goals, it is not needed as a metric for selecting individual measures. The cap-and-trade mechanism that sets a firm, declining emissions cap, as included in the draft Scoping Plan, will lead to a robust market for emissions allowances. The market creates the economic incentives, as well as flexibility, for regulated entities to identify and implement the lowest-cost solutions, eliminating the need for CARB to do cost-effectiveness assessments of every individual measure. Given the presence of a robust cap-and-trade market encompassing over 80% of California emissions (by 2020) will enable those who know their businesses best to find their most cost-effectiveness solutions.

The cost-effectiveness metric is intrinsically limited in that it is strictly a measure of efficiency. Several other economic and performance metrics for evaluating policy options are relevant and worthy of careful consideration.

There are significant avoided social costs associated with meeting AB32 goals. Policies that achieve co-benefits, including the avoided adverse health and ecological impacts from measures that reduce greenhouse gases as well as other traditional air pollutants (criteria pollutants and toxic air contaminants), offer tremendous value to all Californians. A more thorough understanding of the full human health and environmental benefits of all recommended policies will prove another asset to policy makers in their efforts to implement sound GHG reduction policies.

Additionally, all measures, including both direct controls and market-based mechanisms, should be designed with consideration of a broad set of performance criteria, including:

- Equity and Fairness: Who pays, both for measure implementation and, if the measure is not implemented, who bears additional risk, including environmental justice communities
- Innovation: Ongoing, long-run incentives to continue to find new and better ways to reduce environmental impacts
- Past successes and failures of similar measures
- Enforceability
- Potential for unintended consequences

AB 32 Program Design

The measures set forth in the draft Scoping Plan offer a sensible balance of market mechanisms and traditional regulatory policies.

Cap-and-Trade Overview

The multi-sector cap-and-trade program recommended in the plan will provide the environmental certainty and generate the cost-effective emissions reductions required by AB 32. The scope of the cap-and-trade, which will expand to cover nearly 85% of California emissions by 2020, will ensure an efficient and environmentally effective market in which regulated entities have tremendous incentives to cut their pollution quickly and have the flexibility to do so at lower cost than would be possible through conventional direct regulations alone.

Over the next two years, CARB and an array of interested stakeholders will undertake a comprehensive assessment of appropriate market design features. Thorough examination of the successes and shortcomings of current cap-and-trade systems, including the SO₂ trading program, the European Union's Emissions Trading Scheme (ETS), and the Regional Clean Air Incentives Market (RECLAIM), must be a focal point.

The cap-and-trade system must complement existing air quality controls, creating a full regulatory program that addresses both greenhouse and non-greenhouse gas pollutants and delivers substantial environmental benefits to all residents and communities of California. EDF concurs with the Market Advisory Committee (MAC) conclusion that the greatest reductions in non-greenhouse gas pollutants (e.g., criteria pollutants) are very likely to occur in the most polluted areas. CARB should seek to provide further detail on potential criteria and toxic air contaminant reductions to be achieved via the cap-and-trade system.

Allowances

While some administrative allocation of allowances may be appropriate in the near-term, EDF agrees with the MAC report that auctioning is the preferred method of distributing allowances. The value of allowances issued or sold under the cap-and-trade system can be used to generate additional emissions reductions and ensure fairness both for California residents and the regulated businesses.

The list of possible uses of revenue in the draft Scoping Plan (pp. 46-47) is a useful starting point for the discussion. Ultimately, priority should be given to uses that achieve direct greenhouse gas reductions (and co-pollutant benefits), protect low-income residents from regressive economic impacts, and ensure that the overall program maximizes benefits and minimizes costs to Californians.

Offsets

EDF supports the inclusion of high-quality offsets in the AB 32 cap-and-trade system. Offsets offer tremendous potential to inspire innovation in sectors of the economy, including agriculture and forestry, that are large sources (or stores) of greenhouse gases but lack the necessary emissions measurement systems for inclusion under the cap.

In our April 17, 2008 letter to Kevin Kennedy, EDF provided detailed responses to several questions about offsets posed by CARB in a white paper. We noted that an offsets program "not only drives reductions outside of the cap in cap-and-trade programs, it rewards innovators who develop new solutions to reduce GHGs, can facilitate reductions of traditional pollutants in overburdened communities, and can be used to lay the groundwork for including non-capped sectors within a broader cap." Furthermore, we discussed criteria for recognizing reductions via offsets:

"AB 32 laid out fundamental criteria for recognizing emissions reductions in California (§38562 - real, permanent, quantifiable, verifiable, and enforceable). These criteria track closely the nationally and international accepted standards aimed at ensuring the environmental integrity of projects, protecting consumers of offset projects, and creating and maintaining confidence of an offset market. Environmental Defense Fund therefore believes that whatever approval process is used by CARB, meeting these fundamental criteria (AB 32 and internationally accepted criteria) for offsets must be an integral part. That is, CARB must require that every offset project used within AB 32 for compliance purposes must be:

- Real (actually achieve GHG reductions),
- Additional (beyond the business as usual case such that the reductions would not have occurred otherwise),
- Permanent (or have provisions to guarantee the emissions reductions generated will be recouped in the event of a reversal),
- Measureable (with accuracy),
- Verifiable (using disinterested third parties),
- Enforceable (with authority by the government to require the emissions reductions are maintained)."

Carbon Fees

EDF strongly believes that a cap-and-trade system is a more reliable and effective means of incentivizing the substantial emissions reductions required under AB 32 than a carbon fee. However, modest carbon fees to cover administrative costs of AB 32 implementation may be acceptable, particularly if allowance revenue is not available.

The two key features of a cap-and-trade system: (a) an enforceable 'cap' on emissions which guarantees that emissions will go down, and (b) flexibility to seek out and implement low-cost reductions, does not exist with a carbon fee. Without these two features, there is no guarantee of

reaching environmental performance goals, and there is limited ability for society to utilize to their fullest extent available cost-minimizing strategies.

In addition to higher compliance costs and less reliability about outcomes, there is no guarantee that a fee would be set at a level that would inspire sufficient emissions reductions.

Policies that put a price on GHG emissions, including fees, may have direct regressive economic impacts that hit low-income households hardest. The theoretical justification for any environmental impact fee is that the revenues will be used to mitigate the harm caused by the emissions. Yet, with GHG emissions fees, there is no guarantee that the revenues generated will be utilized to effectively mitigate impacts associated with the emissions, or that the mitigation will happen with geographic or temporal proximity to the harm.

Furthermore, a carbon fee (or tax) is likely to be politically unachievable. The difficult fiscal climate in California combined with the urgency need to keep AB 32 implementation on track argues against pursuing a carbon fee (or tax) that requires a 2/3 supermajority vote for passage.

Transportation Sector

Strategies to reduce emissions from vehicle technology, transportation fuels, and land use are all integral pieces of the framework necessary to reduce greenhouse gas emissions from transportation.

Transportation Fuels Strategies

Environmental Defense Fund supports the efforts identified in the draft Scoping Plan to reduce emissions from use of transportation fuels in the state. Further, we commend CARB for utilizing an innovative package of approaches that includes both a Low Carbon Fuel Standard (LCFS) and incorporation of transportation emissions in a multi-sector cap-and-trade program.

Low Carbon Fuel Standard - A properly designed LCFS for California is a key piece of the California emissions reduction strategy. This regulation has the potential to increase the use of existing lower carbon fuels used in the vehicles on the road today, create opportunities to improve those existing fuels, and provide incentives to develop new types of lower carbon fuels and complementary vehicle technologies. Since implementation of the LCFS accounts for approximately 10% of the state's 2020 emissions reduction goal, it is critical that CARB continue the rule development process and not delay the adoption of the regulation.

Environmental Defense Fund analysis supports the draft Scoping Plan contention that low carbon fuels may be cheaper to produce than traditional fossil fuels. For example, it may be cheaper and more technologically feasible to reduce greenhouse gas emissions from electricity generation and delivery than it is to make equivalent emission reductions through modification of petroleum refining equipment and processes. Since the LCFS will facilitate the development of an entire portfolio of new fuels and compliance pathways, it is likely that fuels currently deemed to be cost-prohibitive could become less expensive and more viable as technological innovation occurs.

For more detailed information, please see the in-depth commentary EDF has provided to CARB staff regarding regulation design elements and the import of particular rule development decisions. In addition, we have commented on the potential for low carbon fuels to be manufactured and delivered to vehicles for compliance with the standard.

Cap-and-Trade Program Including Transportation Fuels - Incorporating emissions from transportation fuels into a mandatory cap-and-trade program has tremendous potential to drive low-cost reductions and ensure a more robust market. By holding entities liable for the emissions of the transportation sector, the cap-and-trade program will create incentives to reduce emissions associated with fuel combustion, as well as from emission reductions made in another capped sector or through the purchase of offsets. The economic incentives built into the cap-and-trade program will reward innovative fuel production and use technologies, thereby creating new paths toward compliance with the 2020 goal.

The importance of including transportation emissions in a cap-and-trade, in addition to addressing land use, is highlighted by the fact that returning the sector to 1990 levels will require reductions of approximately 25 MMTCO_{2e} beyond what will be achieved through the LCFS and Pavley regulations. However, California fuel sales accounting, emissions tracking, and reporting may not yet be developed enough to include transportation with a point of regulation at the terminal or blending rack at the outset of the cap-and-trade program. Therefore, Environmental Defense Fund urges CARB to analyze and immediately begin developing the reporting and tracking tools necessary to make transportation fuel emissions a part of the cap-and-trade program both in California and within the Western region. Further, we ask CARB to analyze the impact of a phased inclusion of transportation fuel into the cap-and-trade system on the market and on the ability of the state to meet the reduction targets in AB32.

Interaction between the LCFS and Cap-and-Trade – The LCFS and cap-and-trade programs represent approximately 30% of the state’s emissions reduction goal by 2020. Environmental Defense Fund firmly believes these two policies each have great potential to drive innovation in the transportation sector and must be kept as complementary to one another to achieve the desired result. As discussed in comments submitted to CARB staff for the LCFS rulemaking on May 5, 2008, EDF has serious concerns about allowing credit transfer between the LCFS and AB 32 cap-and-trade program.¹ Specifically:

1. Export of LCFS over-compliance credits has the potential to violate the integrity of the cap,
2. When transportation fuel is within the cap, credit export from LCFS due to over-compliance creates unworkable double counting,
3. Allowing exchange will diminish the overall emissions reduction benefit of the LCFS,
4. LCFS over-compliance credits may not meet the rigorous criteria for qualifying as offsets.

Environmental Defense Fund would strongly oppose a decision by CARB to permit the export of credits from the Low Carbon Fuel Standard to the AB 32 market, regardless of whether transportation fuels are included in the cap. Although we recognize that this option may not actually be utilized depending on the stringency of the LCFS emission reduction requirement and the availability of emissions reduction strategies to fuel providers, Environmental Defense Fund urges CARB to not allow such a potentially disruptive regulation to be adopted.

¹ See Comments of Environmental Defense Fund on the Proposed concept outline for the California Low Carbon Fuel Standard, May 5, 2008

Transportation Vehicle Strategies

Pavley 1, Pavley 2 - Environmental Defense Fund applauds CARB for taking a tough stance to achieve needed greenhouse gas emissions reductions from automobiles. Both the Pavley 1 regulations (adopted following passage of AB 1493) and future Pavley 2 regulations will deliver reductions in greenhouse gas emissions both within and outside California borders as other states seek to adopt and implement our Clean Cars Law. CARB and the Governor's office have continually led on this issue, refusing to wait for federal action (which likely would not achieve the same level of emissions reductions) or back down in the face of EPA's recent decision that California lacks authority to set greenhouse gas standards for vehicles. We are hopeful that whoever is elected President in November will revisit the waiver application for California.

Pavley Backfill - AB 32 requires CARB to implement regulations to achieve emissions equivalent to the reductions that would be achieved through the Pavley regulation if Pavley is not implemented. The draft Scoping Plan has identified two such measures available to California, requiring original engine manufacturers (OEMs) to surrender equivalent reductions and/or creating a feebate program to impose fees on high emitting vehicles. Environmental Defense Fund supports both options in concept, though further information is needed to fully evaluate the proposals.

In the draft Scoping Plan, CARB discusses a reduction measure that would require OEMs to submit verified GHG reductions equivalent to the amount that would have been achieved under full implementation of the Pavley 1 and 2 regulations. This measure has the benefit of continuing to hold automakers accountable for the products they sell, even if the Pavley regulation fails to take effect. This approach is similar to a proposal delivered by Environmental Defense Fund at the "Beyond Pavley" symposium sponsored by CARB earlier this year.

Rather than holding OEMs accountable for only the emissions that occur for the duration of the Pavley 1 and 2 regulations, we recommended OEMs be liable for the lifetime emissions of the vehicles they sell, starting in 2009. The approach outlined in the draft Scoping Plan Appendices mirrors this recommendation. Environmental Defense Fund appreciates CARB identifying these two versions of the "carbon burdens" approach, and we recommend CARB further develop them as soon as possible to give certainty to automakers about their responsibility to account for the greenhouse gas emissions of the vehicles they sell.

Environmental Defense Fund also supports the development and implementation of a feebate program to reward purchasers of low greenhouse gas vehicles through rebates and penalize the purchase of higher emitting vehicles through fees. Such a program is similar to an approach utilized under a previous California Assembly Bill 493 (2007) and recommended by the Union of Concerned Scientists. However, this approach should not be seen as exclusive of other approaches to reduce emissions from vehicles and we look forward to working with staff to develop it further.

Light and Heavy/Medium-Duty Vehicle Efficiency Measures

Environmental Defense Fund fully supports the efforts of CARB to improve the efficiency of light- and heavy-duty vehicles. Measures such as tire inflation, tire tread improvement programs, and other vehicle efficiency measures will benefit Californians by increasing fuel economy as well as vehicle safety in the light-duty sector. However, we encourage CARB to extend these measures to the medium- and heavy-duty sectors as well. For the heavy and medium-duty sector, vehicle hybridization, electrification and friction reduction measures are very beneficial because these strategies both increase fuel efficiency and improve air quality as diesel particulate emissions are reduced. The Aerodynamic Efficiency measure (T-6) is an important first step and will achieve reductions fairly quickly. However, it does little to encourage further development and deployment of other aerodynamic and performance technologies. We hope CARB will find ways to not limit themselves to the SmartWay program.

The long life of diesel vehicles means that implementation of programs within this sector will most likely take a considerable amount of time. To avoid some of the lag time, CARB should develop the hybridization and improved engine efficiency standards at a more accelerated rate, in order for GHG emission reductions to occur as soon as possible. It should also be emphasized that as with the deployment of improved fuel efficiency vehicles produced for compliance with the Pavley standards, hybrid heavy-duty vehicles manufactured through involvement with the California program will also be deployed into other states, thus accruing emissions benefits outside the state's borders. By encouraging hybrid truck purchases, this proposal can also spur the commercial production of these vehicles nationally and significantly bring down the purchase price.

Land Use/Transportation System

The Scoping Plan should go further to reduce greenhouse gas (GHG) emissions generated by the land use and transportation system. The Climate Action Team recognized that the land use/transportation system sector could contribute GHG reductions of about 18 million metric tons (MMT) of CO₂ equivalent. The draft Scoping Plan proposes that this sector contribute only 3 MMT to helping reduce the state's GHG burden. In short, the draft Scoping Plan misses opportunities to implement known measures that have been proven to reduce emissions and that could quickly and effectively capture needed and long-lasting GHG reductions.

In California, the transportation sector accounts for about 38 percent of GHG emissions. Researchers, regulators and advocates have discovered that fuel and technology improvements alone will not achieve the transportation sector reductions needed to meet AB 32 goals. Vehicle miles traveled (VMT) must be substantially reduced to achieve GHG reduction goals. To reduce VMT, measures and strategies that discourage sprawl and encourage more compact development must be adopted in the final Scoping Plan.

Rationale for Requiring Land Use and Transportation System Reductions

Limits of Fuel and Technology Improvements

Even with fuel and technology improvements, California will fall short of reducing the transportation sector's share of GHG emissions to meet AB 32 goals. In addition, VMT reduction will be critical to meet Governor Schwarzenegger's executive order for an 80% reduction of GHG by 2050. Steve Winkelman of the Center for Clean Air Policy estimates that under the most optimistic scenario, emissions from the transportation sector will only begin to get to 1990 levels just before 2030 if VMT growth trends continue. Under a less optimistic scenario, carbon dioxide levels from the transportation sector will be 17 percent above 1990 levels in 2030.²

Reducing VMT by 30 percent overall, or by 8 percent per capita, would assure that the benefits of new technology and fuels, including an advanced form of the Pavley standards, would adequately reduce emissions.³ California could then reach its GHG goals for 2020 in the transportation sector. By 2030, if the VMT reductions continued, California could bring its transportation sector GHGs to a level that is 24 percent below 1990 levels.

² See Winkelman's presentation to the Air Resources Board's Haagen-Smit conference in April 2008: <http://www.arb.ca.gov/planning/hsmi2008/docs/winkelman.pdf>.

³ See Winkelman's presentation to the Air Resources Board's Haagen-Smit conference in April 2008: <http://www.arb.ca.gov/planning/hsmi2008/docs/winkelman.pdf>.

VMT Reduction as a Necessary Approach

The work by Winkelman, and similar or supporting work by state agencies and others, has forged an understanding among California leaders responsible for implementing AB 32 that VMT reductions will be essential to achieve the AB 32 GHG reduction goals.

For instance, the Land Use Subgroup of the California Climate Action Team (LUSCAT), composed of representatives of a range of state agencies including transportation agencies, recently concluded in a submission to CARB that:

“The State must significantly reduce the GHG emissions from the transportation sector. Reductions of GHG emissions from the transportation sector will come from a combination of vehicle efficiency improvements, low-carbon fuels, and implementing transportation demand management (TDM) policies and strategies. The effectiveness of efforts to provide transportation alternatives to the automobile and TDM can be measured in terms of reductions in vehicle miles traveled (VMT) or expected growth in VMT. VMT reductions correlate directly with reductions in GHG emissions.”

Additionally, in response to legislative leadership’s request, the main funding agency for transportation in California, the California Transportation Commission, convened a stakeholder group to develop new guidelines for regional transportation plans that would take into account the need to be consistent with AB 32 goals.⁴ That consensus document noted that as part of a regional transportation plan’s GHG reduction strategy, among other things, emphasis should be placed on:

“...transportation investments in areas where desired land uses as indicated in a city or county general plan may result in vehicle miles traveled (VMT) reduction or other lower impact use.”

The California Air Resources Board organized the Haagen-Smit Symposium in April 2008, bringing together representatives from industry, local and state government, and environmental and health advocates, to consider transportation and land use strategies to reduce GHGs. Participants at the symposium came to a consensus decision that land use measures are necessary to meet AB 32 goals.⁵

These examples are significant in that they support a position long held by environmental, health, and community advocates: unplanned and uncontained development patterns that contribute to increased dependence on automobiles for longer commutes and more frequent vehicle trips to accomplish daily errands are bad for air quality, public health and the environment. We critically need to address ways to change this development pattern due to the urgency to reduce GHGs and maintain those reductions as our population grows.

⁴ For that document, see: http://www.catc.ca.gov/programs/rtp/Final_Letter_to_Perata_with_Attachments.pdf.

⁵ See the Haagen-Smit Declaration and presentations at that symposium at: <http://www.arb.ca.gov/planning/hsmi2008/hsmi2008.htm>.

Measures to Improve Land Use Patterns and Reduce VMT

A number of organizations, including EDF and other environmental and health advocacy groups have submitted lists of recommended measures and actions for the scoping plan, all available on CARB's website.⁶ The Haagen-Smit declaration⁷ and the recommendations submitted by environmental and health advocates to the AB 32 scoping plan process address VMT reductions through seven key approaches:

1. Setting regional GHG reduction targets with local accountability for achieving regional goals.
2. Public investment in better tools and processes that will help local entities plan growth in a way that reduces GHGs, including scenario modeling and blueprint planning.
3. Regulatory measures, such as indirect source rules, that have been proven to reduce pollutants associated with VMT.
4. Pricing measures, including cordon pricing, parking pricing and insurance pricing, that assign to drivers the environmental costs of driving.
5. Transit improvements and innovations—dubbed tailored mass transit—that provide greater choice and reliable alternatives to auto transit.
6. Public spending parameters that give priority to transportation and other infrastructure projects that will help reduce GHGs rather than expand sprawl.
7. Incentives to encourage better local and regional actions, and better individual choices, including location-efficient mortgages.

We can see these measures in action in other parts of the country, like the Pacific Northwest, where experience in Portland has shown that it is possible to set goals and achieve VMT reductions.

Specific Needed Improvements to the draft Scoping Plan

The draft Scoping Plan offers two specific preliminary recommendations (items 13 and 14) addressing the land use/transportation sector that could affect VMT. It offers an additional list of other sector-based measures that are under evaluation. Here we address those measures and propose improvements for the final Scoping Plan.

Item 13, Local Government Actions and Regional Targets: CARB's draft Scoping Plan does a good job in Item 13 laying out the actions local and regional governments can take to achieve GHG reductions from land use decisions. The item is weakened by its lack of specific requirements, such as linking mandatory regional targets to infrastructure funding. The current measure's enforcement is limited to collaboratively developing targets and processes to meet those targets.

⁶ For all scoping plan documents see: <http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm>.

⁷ See the Haagen-Smit Declaration and presentations at that symposium at: <http://www.arb.ca.gov/planning/hsmi2008/hsmi2008.htm>.

CARB notes that the system it designs to meet targets should include at minimum scenario modeling, consideration of other state policy goals, performance indicators and monitoring, coordination of planning, and establishment of priorities for directing state resources. These are all important and should be developed to maximize both incentives for land use and transportation decisions that reduce GHG emissions and disincentives for decisions that would increase GHG emissions. For instance, state resources such as funding for infrastructure should be tied to a region's demonstrated effort to reduce GHGs associated with land use and transportation system decisions that affect VMT. To represent the public's interest in reducing the environmental impacts of land use in this system, CARB should include environmental public interest groups in the collaborative process.

We recognize that there is some debate about whether CARB has the authority to enforce mandatory regional targets. Before finalizing the Scoping Plan, CARB should have legal analysis done to determine whether this authority exists. If CARB lacks this authority, it should recommend in the Scoping Plan that the administration develop and promote legislation granting the authority to monitor and enforce the mandatory targets to CARB or an appropriate agency.

Item 14, High-Speed Rail: The draft Scoping Plan “supports implementation of plans to construct and operate a HSR system between Northern and Southern California.” High speed rail's ability to reduce greenhouse gases depends on a number of factors, including where the rail line is routed and how that location affects land use. Certain pathways and designs will encourage sprawl development; others may discourage it. This measure provides unqualified support for HSR without regard for the rail line's routing and potential long-term impacts on land use. This is unfortunate, especially considering the high cost of this reduction measure and the plan's silence on transit funding generally despite evidence that lowering VMT will require improved public transit systems within California's metropolitan areas.

Other Measures under Evaluation

The draft Scoping Plan offers a handful of other measures that are under evaluation and may or may not be included in the final plan. We urge CARB to include all of these measures as required measures in the final Scoping Plan, with the conditions described below:

Indirect Source Rules for New Development: The San Joaquin Valley Air Pollution Control District adopted an advanced indirect source rule in December 2005. Through changes in on-site development practices and off-site emission reduction programs, the rule has been effective in reducing and preventing criteria pollutant pollution from vehicles and energy sources. Recently, Environmental Defense Fund commissioned Dr. Lawrence Frank to review and evaluate that rule's design and its appropriateness for reducing criteria pollutants based on what's known about land use and pollution linked to land use and transportation.⁸ That peer-reviewed

⁸ Dr. Frank is an Associate Professor and J. Armand Bombardier Chair in Sustainable Transport at the University of British Columbia in Vancouver BC, and a Senior Non-Resident Fellow at the Brookings

study was released on July 9, 2008. Frank concluded that the rule is appropriate for reducing criteria pollutants and, moreover, could be used effectively to reduce GHGs associated with new development. We have appended the study to this comment letter (Appendix B).

CARB's final Scoping Plan should include a requirement that each of the 35 air districts in the state adopt an indirect source rule by January 2012 that contains key elements identified in CARB guidelines for ISR rulemaking. The rulemaking requirement for air districts, supported by CARB guidance on the rule's contents and framework, is similar to approaches CARB has used in the past to advance air quality measures that have statewide application.

CARB should develop those guidelines using the best elements of the landmark San Joaquin Valley rule. This approach creates consistency around the state and limits the likelihood that regions will adopt weak rules to attract development. That is, the guidelines should require district rules that:

- Apply advanced modeling to estimate the indirect source pollution associated with a new development project;
- Require reductions through onsite measures;
- Require offsite mitigation that benefits the community, wherever reductions can't be attained through onsite measures; and
- Include, in the list of offsite mitigations measures, a fee to be paid to the air district to identify and fund offsite mitigation of at least the equivalent amount of GHGs.

Congestion Pricing: We agree with CARB's assessment in the Draft Scoping Plan that congestion pricing is one effective way to reduce GHG emissions. However, it is essential to note that congestion pricing's effectiveness in capturing environmental benefits, such as GHG reductions, depends on how the system is designed and how revenues collected are spent. For instance, congestion pricing that simply increases level of service by adding new lanes funded by tolling does not provide long-term emissions reductions. For example, congestion pricing on SR 91 supported sprawl development patterns and increased VMT. In the final plan, CARB should encourage development of legislation to establish congestion pricing that meets environmental standards and requires the provision of transit service.

Pay-As-You-Drive (PAYD) Insurance: The Department of Insurance and the legislature are pursuing pathways for the insurance industry to offer mileage-based insurance programs. The large VMT reduction potential of these programs has been explored by a variety of experts. An Environmental Defense Fund economist has found that in year 2020 alone in mid-range scenario, with 30% participation, California would lower its VMT by 22.3 billion miles. Between 2009 and 2020, yearly reductions would aggregate to 138 billion VMT avoided, for a total of 55 million tons of CO₂ avoided. This model can be made available to CARB staff for evaluation and use. CARB should reflect these emissions reduction forecasts in its reduction

Institution. Dr. Frank has over 12 years of experience in developing environmental information systems designed to estimate the impacts of the physical environment on household activity patterns, including travel behavior, physical activity and obesity, and household vehicle emissions.

estimates and encourage the Department of Insurance to promulgate regulations that meet or exceed these goals. In recognition of the trajectory of the legal processes, CARB should move PAYD to the “Emission Reduction Measures” section of the Scoping Plan.

Other Measures that Merit Inclusion

The draft Scoping Plan does not mention a number of measures that will help California reduce its GHG emissions from land use and the transportation. A few of these include:

Incorporating Environmental Performance into Infrastructure Spending: The state spends about \$20 billion a year on transportation infrastructure alone. If that funding was prioritized based on projects that reduce GHGs—not increase them—California’s effort to meet AB 32’s GHG reduction goals certainly would be accelerated. The secondary benefits of reduced air pollutants would also be great. The final Scoping Plan should take note of this potential and recommend that each state agency responsible for funding infrastructure projects review each funding account and identify and implement measures to ensure that that spending promotes AB 32 goals.

Tailored Mass Transit: Providing adequate transit service will accommodate Californians’ fuel-price-induced willingness to shift travel modes and will reduce VMT and GHG emissions. Essentially, providing adequate transit will require a commitment to consistent and predictable public investment in transit infrastructure and operation. It will also require new thinking about mass transit and new ways to invest. To date, mass transit has been designed to address a fairly narrowly defined customer base with a few types of service. To be more effective, mass transit must be designed to more closely respond to broader needs through more diverse and expansive types of service. It must be better tailored to meet need.

Parking Management: In most California cities, the pricing and management of parking does not reflect parking’s environmental or social costs. Under-pricing of street parking encourages greater automobile use, instigates more idling and fuel consumption as potential parkers circle streets searching for free or cheap parking, and reduces available short-term customer parking for nearby businesses.⁹ With optimal parking pricing, traffic is reduced and revenues are available to support street improvements that attract shoppers. Similarly, offering free parking to employees discourages employees from considering mass transit or carpooling and inadvertently penalizes those employees who do use mass transit. These measures should be researched and included in the final Scoping Plan.

⁹ Donald Shoup, *The High Cost of Free Parking*, APA Planners Press, Chicago, 2004.

Electricity and Natural Gas Sector

Reducing emissions from the electricity generation and natural gas sector is critical for California to meet its emissions reduction targets. To capture the full range of opportunities for emissions reductions, CARB must seek to make energy generation and transmission cleaner and more efficient, as well as seek to reduce overall demand for energy.

Inclusion in the Cap-and-Trade Program – Direct Emissions Reductions

Environmental Defense Fund supports the inclusion of the electricity and natural gas sectors at the outset of a multi-sector greenhouse gas emissions cap-and-trade program. This position was also endorsed by the Western Climate Initiative, the California Market Advisory Committee (MAC), and the California Public Utilities Commissions and Energy Commission Joint Proceeding. Furthermore, this framework is similar to other greenhouse gas reduction programs across the world and will enable the California energy sector to seek out and achieve the most cost-effective reductions in a rapid manner.

A robust and stable emissions trading market requires CARB to design and implement programs to ensure data accuracy, reporting consistency, prevention of double counting, etc. The mandatory reporting regulation adopted in 2007 took important steps toward those goals. However, additional steps must be taken to fully capture the realities of these sectors, such as establishing an emissions reporting and data release program to effectively manage compliance period-related market fluctuations and natural gas utility-wide emission portfolios.

Environmental Defense Fund supports the inclusion of both core and non-core users of natural gas in the cap-and-trade program. This can be captured in a fully upstream cap-and-trade program, or a program that regulates emissions in a midstream or downstream manner with utility distributions to non-core customers counting as an aggregated source of emission. This recommendation is similar to that proposed by the WCI in its market design documents released in May 2008. Core users include large businesses and industries that burn large quantities of gas for their industrial and commercial needs. Non-core users include residences and small businesses that each burn small amounts but in the aggregate use large quantities of gas. The point of regulation for non-core customers in a midstream or downstream program is typically thought to be at the utility provider. Currently, however, it is unlikely that sufficient reporting tools are in place to allow for regulation of utilities on this basis. Therefore, we recommend that CARB develop the reporting and tracking systems now to perform reporting of emissions from non-core natural gas end users on a regional or utility load-shed basis.

Increasing the statewide Renewable Portfolio Standard

Generating energy from renewable resources will be a key component of achieving statewide reduction mandates by 2020. Environmental Defense Fund supports the increase of the renewable portfolio standard from 20% to 33%. Though we recognize there may be challenges in integrating renewable sources onto the grid and siting new generation, we feel confident that stakeholders can work together to overcome these barriers. Therefore, we urge CARB to work

with the California Energy Commission and the Public Utilities Commission to ensure the state can meet the elevated standard and create a lower carbon energy infrastructure.

Carbon Capture and Sequestration – Direct emission reduction

Energy generation production methods and technology are changing. As our society shifts toward a lower carbon intensity infrastructure, cost-effective methods that produce reliable energy with reduced greenhouse gas emissions will be at an increasing premium. Environmental Defense Fund observes that carbon capture and geologic sequestration (CCS) is no longer hampered by technological barriers and has overcome significant constraints on location as better information on geologic formations and sequestration potential has been developed. As a result, CCS is quickly becoming a cost-effective technology to facilitate significant amounts of low carbon intensity energy production in California in both medium and long-term scenarios. For example, CCS has been proposed both for new IGCC coal plants in the state, new hydrogen production plants, and retrofits of cement manufacturing facilities. However, for cost-effective CCS to become a viable reality, significant safeguards to ensure proper site characterization, robust monitoring and verification, and accurate accounting methods must exist.

Ongoing efforts within the California Energy Commission's PIER research agenda have characterized a large potential for geologic sequestration of carbon dioxide in California and the Western States. Further, the US Department of Energy, independent domestic and international research institutions, and more recently the United States EPA have been actively developing and/or using monitoring and verification methods to ensure injected carbon dioxide currently is remaining sequestered at the injection site.

Environmental Defense Fund recommends CARB expand the discussion of carbon capture and sequestration in the scoping plan to identify near-term milestones and determine whether CCS will be part of the long-term solution in California. For example, CARB should identify projects that have the potential to implement CCS in the state and achieve reductions by 2020. Further, CARB should collaborate with state agencies (e.g. California Department of Conservation), using information from international and domestic research institutions, to ensure the development of robust and accurate accounting protocols to measure carbon dioxide sequestered in CCS projects.

Increase in Solar Hot Water Heating– Direct and indirect emission reductions

While Environmental Defense Fund is enthusiastic about increasing the deployment and use of thermal hot water heating in the state, we respectfully ask CARB to be more ambitious than expecting merely 200,000 water heater installations by 2020. With the current growth rates in housing construction and remodeling, the ongoing green building push for commercial and residential structures, and LEED certification growth and popularity, we see little reason why the vast majority of new homes and a significant portion of retrofit homes should not be expected to utilize solar thermal water heating.

While we observe that installation of solar units is one of the more cost-effective energy efficiency measures for new business or residences to do, we also recognize that up-front capital costs, lack of knowledge about technology, and inability to capture energy savings due to rental and lease contracts stifle technology adoption in existing buildings. Therefore, we urge CARB to seek to reduce the barriers to implementation of this technology in the existing building stock by working with the California Energy Commission and identify innovative funding mechanisms and educational campaigns for owners and renters.

Small Businesses and Low-Income Households – Indirect emissions reduction

Finding solutions to climate change will require action by small businesses to improve energy efficiency. While these actions require up-front investment, the end result will offset higher unit costs of electricity and fuel. Similarly, low-income households will enjoy more benefit from energy efficiency investments than wealthy households because the resultant energy bill savings will have a bigger marginal benefit on the household budget than in homes where energy bills are a relatively small portion of income.

The draft Scoping Plan notes that "opportunities for small businesses will be an important consideration." EDF urges CARB to be more aggressive in efforts to assist low-income households and small businesses to make energy efficiency improvements. This concept is detailed in a proposal titled, "Climate for Community: A Proposal to Allow Small, Dispersed Emission Sources to Participate in Assembly Bill (AB) 32 Carbon Cap and Trade Markets" (see Appendix C).

Water Sector

Reducing greenhouse gas emissions associated with California's water sector is both a critical challenge and an exceptional opportunity. Several promising strategies emerged from the Climate Action Team WET-CAT process which should be included in the next version of the plan.

Water accounts for roughly 20% of energy use in California. The State Water Project (SWP) and the Central Valley Project (CVP), the largest water projects in California, convey water significant distances and require considerable energy to do so. In fact, the SWP is the single largest user of energy in California, consuming an average of 5 billion kWh/yr (about 2-3 % of all electricity consumed in California). Pumping one acre-foot of SWP water to Southern California requires, on average, approximately 3,000 kWh.¹⁰ Opportunities to reduce these emissions through more efficient urban and agricultural water use and improvements in technology exist and must be pursued.

Environmental Defense Fund strongly recommends the following measures associated with the water sector be adopted in the Scoping Plan.

Improvements in statewide urban water use efficiency

Significant emissions reductions can be achieved through improved urban water conservation, but that will require more widespread implementation of existing water use efficiency Best Management Practices (BMPs). The State Water Resources Control Board must review, update and improve the BMPs of the California Urban Water Conservation Council (CUWCC) including the construction of a valuation protocol and verification process to ensure aggressive implementation of water conservation. Without both a valuation protocol and a rigorous verification process, California will remain unable to accurately track its progress towards achieving water use efficiency and will therefore be unable to determine its contribution to AB 32's greenhouse gas emission reduction mandate.

Verification of BMP implementation should be a minimum criterion to receive grant funds from Proposition 84 and other funding sources. We recommend that funding for those projects be prioritized based on potential for decreased water and energy demand, increased water and energy efficiency, and reduced GHG emissions. The Scoping Plan should explicitly recommend, at a minimum, the widespread implementation of the CUWCC's BMPs by all urban water agencies.

Furthermore, all water management and groundwater replenishment agencies and water, wastewater, and recycled water treatment agencies should assess their system's water and energy balance and submit these assessments to DWR/SWRCB as a component of BMP compliance.

¹⁰ Anderson, C. 1999. Energy Use in the Supply, Use, and Disposal of Water in California. California Energy Commission, Sacramento, CA.

Finally, the Plan should explore whether carbon offsets could be available for water conservation projects linked to their greenhouse gas emissions savings, which would assist localities in implementing BMPs.

Establish and implement statewide agricultural water use efficiency objectives to reduce GHG emissions

While increasing urban water use efficiency is critical in reducing greenhouse emissions associated with the water sector, more must be done to improve agricultural water conservation, the greatest consumer of water in the state. Agriculture uses approximately 80 percent of the developed water supply in California, and groundwater pumping and irrigation techniques are huge energy consumers.¹¹ Significant energy savings can be achieved by reducing agriculture water use—particularly south of the Delta—since significant energy is used to convey water.

The Plan should make more specific recommendations to improve agricultural water use efficiency through the development of implementable and enforceable targets. Specifically, efficiency of irrigation systems through improved water measurement and irrigation scheduling, installation of micro-irrigation systems, shifting to lower-water use crops and other measures can translate into significant water savings and hence reductions in greenhouse gas emissions. While some BMPs have been developed by the Agriculture Water Management Council, their use is entirely voluntary. The Department of Water Resources oversees implementation of the CALFED Agriculture Water-Use Efficiency Program, but little has been done and nothing is enforced. The Scoping Plan should more explicitly state the importance improving agricultural water use efficiency in helping to meet the greenhouse gas emission reduction goals of the state.

Encourage integration of climate change into California water planning to reduce greenhouse gas emissions

All major water planning documents in California, including the California Water Plan Update, State Water Project Delivery Reliability Report, Urban Water Management Plans, and Integrated Regional Water Management Plans, as well as all FERC re-licensing, flood plans and Environmental Impact Reports, should include climate change projections and approaches to reduce greenhouse gas emissions. In particular, the Department of Water Resources should aggressively pursue and include a carbon-neutral energy portfolio which is tied to divestment and decommissioning of high GHG emitting power supplies.

¹¹ Department of Water Resources, California Water Plan Update: Bulletin 160-98

Green Buildings and Energy Efficiency Sector

California has led the country in promoting energy efficiency in buildings. The state's efforts have allowed per-capita energy use to remain stable and lowered energy costs for consumers. Despite this success, the draft Scoping Plan recognizes building energy use from electricity, natural gas, and water constituted one-quarter of the state's greenhouse gas emissions in 2004. The Scoping Plan Appendices state that meeting California's aggressive climate change goals will require that new buildings be built as energy efficient as possible and with the least environmental footprint.

To meet this challenge, the Scoping Plan Appendices discuss strong potential measures to reduce GHGs from new and existing buildings, but not all of these measures appear to be recommended for adoption. To ensure that "new buildings be built as energy efficient as possible and with the least environmental footprint," measures to both maximize the energy efficiency of new buildings and retrofit existing buildings need to be included in the final Scoping Plan. These measures should include plans to address the energy and resource efficiency of existing buildings through incentives and other measures proposed in the Scoping Plan Appendices. CARB should commit to working with the CEC to develop new building standards that mandate net-zero energy efficiency and reflect the transportation energy use that results from the location of the building; the GHG reductions from these measures should be counted in the scoping plan towards meeting AB 32 goals. Funding mechanisms, such as those discussed in the Scoping Plan Appendices, should be explored and adopted to support these policies.

"Climate for Communities" is an innovative funding mechanism conceived by San Francisco Community Power and EDF that was not discussed in the Scoping Plan Appendices but should be included in the final Scoping Plan. This mechanism, described in an attached document (see Appendix C), enables small businesses and low-income households to aggregate emissions reductions for the purposes of carbon market crediting. This tool can achieve reductions and provide economic benefits to low-income households and small businesses by providing ongoing incentives for reductions in these sectors. In this way, populations who have previously suffered from pollution and who are at greatest risk of harm from global warming would be able to benefit environmentally and economically. Several cap-and-trade design approaches might be used to avoid double counting of reductions with the utility sector's compliance obligation, such as allowance "carve-outs" or a bidding system whereby third party community aggregators make commitments to achieve a portion of an electric utility's compliance obligation at a fixed fee paid to the aggregator by the regulated entity.

Additionally, Environmental Defense Fund and other stakeholders have expressed concern that the green buildings standards recently released by the Buildings Standards Commission may fail to establish strong expectations for environmental performance and may create confusion over how the new standards will interact with existing energy efficiency codes and local standards. As stated in the Scoping Plan Appendices, the requirements contained within the green buildings code need to be well-aligned and supportive of existing green building standards to achieve any meaningful improvement beyond those already offered by the energy standards. To address

potential shortcomings, CARB should work with the Buildings Standards Commission to ensure that their green buildings standards maximize greenhouse gas reduction opportunities and complement the CEC's standards for energy efficiency.

Industry Sector

Environmental Defense Fund supports the proposed requirements on heavy industry (refineries, cement plants, large stationary sources, power generation, etc.) in the draft Scoping Plan. Requiring large polluters to perform energy efficiency audits while also including total emissions in a multi-sector cap-and-trade program will enable industry to quickly find and make the lowest cost emissions reductions available to them. Further, by combining energy efficiency audits with co-pollution benefit audits, the draft Scoping Plan recommendation will help both businesses and CARB identify greenhouse gas emissions reductions strategies that also reduce conventional air contaminants. Although the final use of co-pollution benefit audits is not made explicit, Environmental Defense Fund supports the use and strengthening of traditional tools like rule provisions and permit conditions (as named in the draft Scoping Plan) to achieve substantial and necessary criteria pollutant and toxic air contaminant reductions, especially in areas historically burdened with these pollutants.

While we agree with CARB's recommendation for a robust, multi-sector cap-and-trade program, CARB should apply the mandatory reporting to entities emitting 10,000 MTCO₂ instead of 25,000 MTCO₂ and seek to include these additional sources in the cap-and-trade program at the appropriate time. Including more sources in the cap-and-trade program will achieve more co-pollutant emissions reductions as smaller businesses improve their efficiency and decrease fuel use and would parallel the threshold being considered in Congress.

Comments on Other Measures under Evaluation

Meeting the statewide emissions reduction goals under AB 32 will require implementing a range of emissions reduction measures. For emissions reductions unable to be captured through market-based measures, Environmental Defense Fund recommends CARB work quickly to assess the cost-effectiveness of direct regulations to reduce greenhouse gases.

Industry Sector: California Refining and Oil / Gas Production Industry

Although the refining and oil production sector is likely to be under a cap-and-trade program, CARB has nevertheless proposed direct regulations for these sectors. One main reason for this approach is that CARB is attempting to quantify the total amount of greenhouse gas, criteria pollutant, and hazardous air pollutant emissions reductions possible from the refining and oil/gas production industry. As discussed in prior comments to the agency, knowing the total emissions reduction potential from individual facilities will be unlikely because of the differences between them. While some production facilities have spent large sums of money to modernize equipment, others have trailed behind and are seeking to catch up to the industry average. Furthermore, while some oil and gas fields have sought emissions reductions through participation in voluntary programs, others have not. Although Environmental Defense Fund supports the efforts to improve the data on existing emissions reduction opportunity, we also

observe that the lack of accurate quantification of the total potential reductions should not prevent these sector from being included in a cap-and-trade program.

Recommendation: CARB should perform an independent analysis to determine the most equitable method of allowance allocation.

Over the past several years, individual California refineries have been steadily expanding their production to meet increased fuel demand. Methods to achieve this production increase have ranged from refinery creep (through debottlenecking and equipment modernization) to installation of additional processing units. This increase in individual facility production and emissions rates has offset reductions from the closing of a few major refineries, (e.g. Pacific refinery). While the emissions growth rate for the entire refinery sector has remained somewhat flat, emissions rates at each facility have increased in most cases. Therefore, as CARB moves forward to develop a mandatory cap-and-trade program that includes refineries, Environmental Defense Fund recommends this sector be the subject of an independent analysis to determine the most equitable method of allowance allocation. Such an emissions trend would lean toward allocation based on emissions performance benchmarking. CARB should also examine and compare growth rates for California refinery emissions to refineries in the WCI region (outside California) and determine whether a uniform allocation method is appropriate.

Recommendation: CARB may want to delay the development of direct refinery energy efficiency regulations until the energy efficiency audits are complete.

Compared to greenhouse gas reduction projects in other sectors, initiating a major energy efficiency improvement project at a refinery may be the highest cost facility modification. However, in addition to generating greenhouse reductions, these changes also create massive energy savings that correlate to large monetary savings per facility. Environmental Defense Fund supports the measure to require energy efficiency audits at these facilities and identify where changes can be made, both to achieve emissions reductions and to save large amounts of money in the long-run.

Although Environmental Defense Fund supports the efficiency audit measure, we also are aware of the potentially long timelines associated with the making the type of equipment modifications identified in the Scoping Plan Appendices (installing new boilers, modernizing flare systems, replacing hydrogen plants, etc.). Therefore, in order to ensure that facilities have the best knowledge about where to make investments in their facilities, CARB should make sure these audits meet rigorous accounting criteria and deliver usable results. Upon completion of these audits, CARB should perform in-depth analysis and public discussion of how cost-effectiveness determinations will be used to decide whether specific efficiency improvement projects will be required, whether to initiate an industry-wide intensity standard, or whether all emissions reductions will be captured in the cap-and-trade program.

Recommendation: CARB should commit to developing a more accurate fugitive emissions accounting protocol and emissions reductions quantification protocol for the refining and oil and gas sector.

Environmental Defense Fund supports the inclusion of refineries and oil and gas production facilities within the cap-and-trade program. However, fugitive emissions estimation protocols rely heavily on assumptions and emissions factors that are difficult to verify. In addition, there are currently no accepted fugitive emissions reduction project protocols for either industry. Therefore, we recommend that CARB commit to developing a more accurate fugitive emissions accounting protocol and emissions reductions quantification protocol for the refining and oil and gas sector, subsequently noting that commitment in the final Scoping Plan. Although efforts are underway at regional organizations like the Western Regional Air Partnership, California should play a leading role in these efforts. Such an approach would be in line with the recommendations of the California Market Advisory Committee and would be consistent with the discussion of offsets in other sections of the draft Scoping Plan.

Recommendation: CARB should work with appropriate state agencies to develop tools that quantify and document enhanced oil recovery-generated carbon dioxide reductions.

Enhanced oil recovery (EOR) using carbon dioxide from industrial sources is a developed practice for improving well yields in mature fields. During this process, large amounts of carbon dioxide remains below ground, trapped where the removed oil used to reside. This technology is in place across Texas as well as in some parts of California. Although it should not qualify as sequestration in the absence of appropriate monitoring and verification, enhanced oil recovery represents the bulk of carbon dioxide that has been trapped underground thus far in the United States, and many petroleum reservoirs will make excellent sequestration sites. Environmental Defense Fund therefore recommends CARB work with the California Department of Conservation's Division of Oil and Gas and other appropriate state agencies to determine what methods can be used to quantify and document the emissions benefit of EOR in the state. If no such methods are deemed sufficient, Environmental Defense Fund recommends CARB work with these agencies to develop the approved tools to quantify and document EOR-generated carbon dioxide reductions. Furthermore, we recommend these efforts be included in the final Scoping Plan and characterized as potential emissions reduction strategies.

Industry Sector: Cement Industry

Environmental Defense Fund supports the discussion in the draft Scoping Plan of both including cement plants in the cap-and-trade program as well as the potential value of achieving demand reduction by changing the traditional make-up of cement and concrete. Through taking action to recognize the benefits of blended materials, CARB will encourage innovative practices already taking hold in California and elsewhere. It is critical, however, that any rulemaking to require certain blending ratios be accompanied by strategies to prevent leakage and undue cost impacts on the California cement industry.

Industry Sector: Boiler and Engine Operations

Improving boiler and engine efficiency has received little attention even though the strategy carries a potentially significant energy savings benefit through reducing fossil fuel use. Environmental Defense Fund supports efforts to provide training, education, auditing assistance, etc. to owners and operators of boilers and engines. However, if the mandatory cap-and-trade program is extended to include sources whose annual emissions are 10,000 MTCO₂e or higher (as opposed to 25,000), many of the emissions benefits would accrue through the market because a price on carbon would reward those able to reduce their fuel use. Furthermore, if the cap-and-trade program included natural gas sector emissions associated with core and non-core customers, engine and boiler efficiency improvements are more likely to be demanded by energy suppliers seeking to reduce their emissions.

Waste Management and Recycling Sector

Managing waste to reduce greenhouse gas emissions requires action at all levels of the waste handling chain from waste generation, collection and handling to intermediate and final disposal. Environmental Defense Fund fully supports the single required measure in the draft Scoping Plan that is a proven and effective strategy to reducing emissions associated with waste: improving landfill methane control. We also recommend CARB move towards mandatory action rather than stating aspirational goals in the areas of increasing diversion, recycling and composting.

In addition to specific landfill gas collection and control requirements implemented through discrete early action measures, Environmental Defense Fund views other programs implemented under the final Scoping Plan (e.g. increasing the Renewable Portfolio Standard, the Low Carbon Fuel Standard, and allowing offsets) as important tools to reduce emissions from the waste handling system. Therefore, we recommend the draft Scoping Plan identify and highlight the interactions of these other strategies with the waste handling sector to provide a more robust discussion of opportunities for emission reductions. Specifically, Environmental Defense Fund believes the RPS can push a larger proportion of the state's electricity to be made from landfills utilizing landfill gas to energy; the LCFS can reward landfills that construct and operate landfill gas to transportation fuels (LNG) systems; and offsets can reward waste handlers who engage in effective diversion programs once necessary accounting protocols are developed.

While Environmental Defense Fund supports the measures identified above, we also support expanding existing tools and developing new tools to decrease emissions from the waste sector. Therefore, we see the creation of financial mechanisms to facilitate landfill gas to energy projects, increasing composting and commercial recycling, and establishing extended producer responsibility as important measures for CARB to implement. These mechanisms all have potential to reduce emissions both on and off the landfill surface and can also create new economic opportunities and energy savings. In addition, Environmental Defense Fund recommends that CARB evaluate other measures identified in the ETAAC report.

We acknowledge that resource and time constraints prevent CARB from implementing every measure identified for the waste management sector. However, Environmental Defense Fund believes that implementing the measures identified have the potential to both reduce emissions and create public awareness of efforts the state is taking to combat global warming. Measures such as these will help build public support for AB 32 and should be vigorously pursued wherever possible.

Forest Sector

We applaud CARB for highlighting in the draft Scoping Plan the important contribution forests make to mitigating climate change and the critical role of forests in meeting our 2020 and 2050 goals. EDF will continue to be an active participant in deliberations with CARB, the Board of Forestry, and other agencies about the specifics of that role.

Forest Carbon Sequestration Target

EDF supports the establishment of an industry or company-wide baseline for assessing additionality of sequestration in the forest sector. We recognize that setting an appropriate target is a difficult task given uncertainties associated with inventory of existing forest carbon stocking and forest emission sources, and carbon reductions may be vulnerable to manipulation.

That said, we suspect that the sequestration target could be set at a substantially higher level for the following reasons:

- Many California forests are actively growing or many others could experience greater growth through application of widely accepted silvicultural techniques and modest public investment.
- Many of these same silvicultural techniques will result in an increase in resilience to catastrophic forest fire and insect damage thus reducing direct emissions from the forest sector.
- Trends that indicate that California forests may be sequestering carbon at a declining rate can and should be reversed, and techniques to do so can be easily implemented.

We recommend that CARB, working with its agency partners, commit to a process of augmenting inventory information and adjusting its net emissions target for the forest sector as this information improves. This target should balance climate mitigation goals with longstanding goals of restoring ecological health and resilience of California's forest ecosystems.

Development of 2020 Strategies

EDF looks forward to working with the Board of Forestry, the Resources Agency, Department of Forestry and Fire Protection, and other stakeholders to develop specific strategies that will help the state meet its 2020 target for the forest sector. We recommend that CARB and its partner agencies consider the following broad policies:

- Offsets – EDF supports the inclusion of high-quality offsets as a compliance option in a California cap-and-trade program. We believe there are numerous opportunities for high-quality offsets in the forest sector and that great vigilance is needed to ensure reductions meet rigorous criteria.
- Other forest stewardship incentives – Providing financial incentives and management advice to non-industrial private forest (NIPF) landowners, restoring forest ecological

integrity, increasing forest growth, and increasing resilience to catastrophic fire are cost-effective strategies for reducing net GHG emissions. The state should fully fund the California Forest Improvement Program (CFIP), allow cost share funds to be used to pay for services of a registered professional forester, and explore opportunities for reducing compliance costs for NIPF landowners.

- Federal forests – Half of California’s forested land is federally-owned. Strategies to increase sequestration and build resilience to catastrophic fire and climate change on federal forestland must be a part of any strategy adopted by the state. Every effort should be made to cooperate with federal land management agencies, coordinate forest management and project funding strategies, and to inform Congress about the resources and authorities required to optimize federal forestland management.

Emission Reduction Co-Benefits

Application of these strategies in pursuit of a more aggressive net emission reduction target for the forest sector will not only provide substantial cost-effective climate benefits but will also provide a host of co-benefits. These include a suite of ecosystem services such as enhanced wildlife habitat, improved water quality, and attenuation of flows derived from snowmelt. Improving resilience to catastrophic wildfire in California forests will reduce public expenditure related to firefighting, save lives and property, and reduce air pollution during the wildfire season. In addition, these approaches will generate social and economic benefits, particularly associated with renewal of local economies in forested communities in California.

High GWP Pollutant Sector

Reduction of emissions from high GWP gases represents a significant source of emissions reductions for the state, with the bulk of reductions achieved from newly proposed reductions in mobile sources (3.3 MMTCO₂e) and stationary sources (11.6 MMTCO₂e). Furthermore, since the use of transportation vehicles and durable goods using cooling equipment shows an increasing amount of both potential banks of high-GWP pollutants and corresponding emissions of high GWP pollutants, it is important to enact measures now.

As identified in workgroup meetings and materials released from staff, a large amount of the reductions envisioned under this measure will be achieved from measure H-6, reductions in stationary sources. Within this measure, a majority of reductions will be achieved through improved air conditioning and refrigeration leak repair, reporting, servicing and control, as well as through measures aimed at sales of material such as a recycling and deposit program. In addition, a large component (approx. 35%) of the reduction package is contingent on the development of new specifications for commercial and industrial refrigeration. Environmental Defense Fund is very supportive of CARB implementing these measures through cooperation with other state agencies, and we view each as an important tool to prevent both intentional and unintentional releases of high GWP gases.

CARB has identified the air conditioning and refrigeration leak detection and repair measure as cost-effective, and it will likely save regulated entities considerable amounts of money in avoided refrigeration costs. For the recycling and deposit program, CARB has also found that improved refrigeration reclamation and avoided emissions will likely result, and the measure will save the industry money overall. However, for establishing new specifications for refrigeration and A/C units, CARB has decided it is too soon to set performance specification standards for using high GWP materials. Rather, such standards will be developed once an industry-wide baseline can be determined. While Environmental Defense Fund supports the decisions to improve high GWP material leak rates and start a deposit program, we encourage CARB to take faster and more specific steps to push the industry away from high-GWP materials sooner than 2015 as currently proposed.

Use of high-GWP materials in refrigeration and air-conditioning units arose from the need to shift away from ozone-depleting substances. Now that it is apparent that these new chemicals are harmful to our environment by way of their climate-forcing characteristics, it is also apparent that we must move with deliberate speed to shift the industry to truly safe alternatives. While we recognize that technological and economic barriers exist that may prevent widespread adoption of new refrigeration systems (e.g. CO₂-based systems, low GWP refrigerant systems, etc.), we also recognize that these systems have tremendous potential. Further, the faster we transition away from installing and maintaining systems that use high GWP materials, the less remediation will be needed through leak detection and repair and the less opportunity we will have for uncontrolled releases. Therefore, Environmental Defense Fund recommends CARB take steps as soon as possible to identify and promote low emissions refrigeration systems and start the process of transforming stationary refrigeration before 2015 as proposed. Such steps should

include rewarding early action for entities that transition to low GWP materials in the near term and speeding up the development of an industry inventory to determine the extent and form of proposed new specification standards.

Agriculture Sector

New methods of agricultural production, land management, energy efficiency, and waste processing could be key drivers of California's low-carbon economy. The agriculture sector has great potential to sequester carbon, and preserving these lands can indirectly reduce emissions from other sectors. Agricultural land can sequester 6 MMTCO₂E of carbon through soil and farmscape sequestration¹² and creates a natural barrier to urban sprawl which helps to lower vehicle miles traveled (VMT) and associated GHG emissions. This approach also offers substantial co-benefits associated with the increase in soil health, wildlife habitat, and air and water quality. The final Scoping Plan should develop the potential of this important sector through offset opportunities and targeted incentive programs.

The agriculture sector recommendation contains only one emissions reduction policy: encouraging the use of methane digesters at large dairies. This measure will initially be voluntary, incentivized through marketable emissions reduction credits, favorable utility contracts, or renewable energy incentives, and may become mandatory at the five-year update of the scoping plan. We support creating incentives to use methane digesters and recommend that CARB provide guidance to local agencies and project developers to ensure that projects maintain air and water quality.

The final Scoping Plan should address a number of additional key agriculture sector technologies. For example, the draft Scoping Plan notes that efficiency, including water efficiency, was recommended by the ETAAC. The Scoping Plan Appendices recognize that agriculture accounts for 80% of California's total water use and simply state that while individual farmers can reduce water consumption, further research is needed to determine how widespread GHG reductions can be achieved. CARB fails to provide a plan for that research or a recommendation on incentives that will encourage individual farmers to reduce water use. Reductions from individual use can be gained now and will still be applicable if the larger system is made more efficient. CARB should clearly articulate how agricultural energy efficiency, including water efficiency, will be encouraged upon implementation of the scoping plan while additional research is undertaken to determine how the larger system can become more efficient. For more information, please see Environmental Defense Fund's comments on Water Sector provisions of the draft Scoping Plan.

Additionally, CARB does not provide clear direction on the use of biomass/biogas sources other than methane. As recognized in the Scoping Plan Appendices, the use of these sources for energy production would reduce open burning, improving air quality and disposal of these materials in landfills. The only mention of developing these sources for energy production in the draft Scoping Plan is that they will be tracked and accounted for in the energy sector, and they are only briefly mentioned in conjunction with the Renewable Portfolio Standard. Though they are described as opportunities in the Scoping Plan Appendices, there are no additional details about incentives to encourage development of these projects. CARB should provide clear

¹² ETAAC Final Report, page 6-1

incentives for sustainable biomass/biogas sources to be developed as it has done for methane digesters, while also clarifying their path to implementation in the energy sector.

Finally, we recommend that CARB develop a clear roadmap for unlocking the offset potential associated with carbon sequestration and direct emission reductions in the agriculture sector. The draft Scoping Plan alludes to this potential but defers it to an unspecified later date pending the development of accurate measurement protocols. EDF is working actively to develop measurement protocols and test protocols through demonstration projects. In California, we have developed cooperative partnerships with academic institutions, trade associations, and NGOs to explore reduction opportunities associated with rice cultivation, rangeland management, and riparian restoration. In the near future, we will be developing additional project types and associated measurement protocols. In each case, we are confident that high quality measurement protocols will be developed in time to play a strong role in any offset system that might emerge as a part of California's AB 32 cap-and-trade program.

Progress in developing measurement protocols could be greatly enhanced with additional funding for protocol development that fully incorporates sound science, proven demonstration projects, and robust stakeholder input. We recommend that CARB identify resources to expedite this process and ensure that high-quality agricultural offsets play a strong role in generating emissions reductions required by AB 32.