November 18, 2008

Chairman Nichols and Members of the Board
California Air Resources Board
1001 "I" Street
Sacramento, CA 95812

Re: NRDC Comments on AB 32 Proposed Scoping Plan for Policies to Reduce Global Warming Pollution

Dear Chairman Nichols and Members of the California Air Resources Board,

On behalf of the Natural Resources Defense Council (NRDC), we appreciate this opportunity to offer our strong support of the California Air Resources Board's (CARB) Proposed Scoping Plan for policies to reduce global warming pollution pursuant to Assembly Bill (AB) 32. We commend CARB staff for its thoughtful, thorough, and hard work to develop the plan and appreciate the open and public process CARB has conducted for all stakeholders to provide input as staff worked to develop the Scoping Plan for your adoption by the end of the year. We strongly urge the Board to adopt the Scoping Plan at its December 11, 2008 meeting.

The Proposed Scoping Plan is poised to be the first comprehensive, binding statewide plan to curb global warming and is truly indicative of California's leadership to address this important issue. NRDC strongly supports the plan's overall approach to meet the goals of AB 32 through a suite of tools and measures across all the state's sectors, a combination of which are needed to achieve the required pollution reductions. The Proposed Scoping Plan is an excellent blueprint to guide the state's detailed implementation of the plan over the coming years.

Thanks to decades of leadership by the Legislature and numerous state agencies, California has a solid foundation of policies that provide significant greenhouse gas (GHG) emission reductions to build on, including energy efficiency programs, building and appliance efficiency standards, a renewable portfolio standard, a generation emissions performance standard, and vehicle emissions standards. As the Proposed Scoping Plan indicates, continuation and expansion of these successful regulatory policies and performance standards are the underpinning of the plan to reduce global warming pollution, cut air pollution, and spur technological innovation. Even deeper pollution cuts can be achieved through the addition of a well-designed cap-and-invest program that operates in conjunction with direct regulations throughout all the state's sectors.

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We appreciate the improvements that have been made from the Draft Scoping Plan released earlier this summer, including the incorporation of a margin of safety to ensure AB 32's emission limit is met. We also believe the Proposed Scoping Plan can be further strengthened, particularly in the areas of land use, forests, and industry. Enclosed are NRDC's comprehensive set of comments and recommendations for these and other sectors in the Proposed Scoping Plan.

All in all, we believe the Proposed Scoping Plan for global warming solutions is the economic stimulus plan the state needs now. By forging the transition to a clean energy economy to help curb global warming, this plan will launch new jobs, businesses and prosperity here at home in California and around the world. Once again, California is leading the way.

Thank you for considering NRDC's input throughout the Scoping Plan development process. Again, we strongly urge you to adopt the Scoping Plan at your upcoming meeting on December 11. We look forward to continuing to work closely with CARB to develop the suite of regulations to implement this plan that will meet or beat AB 32's emissions limit, boost our economy, provide air quality benefits to California, and position the state to achieve the Governor's goal for deeper pollution cuts by 2050.

Sincerely,

Audrey Chang
Director, California Climate Program

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I. INTRODUCTION

NRDC appreciates the opportunity to comment on the Proposed Scoping Plan (PSP). We strongly urge the California Air Resources Board (CARB) to adopt this aggressive blueprint for implementing AB 32 at its December 11, 2008 meeting. These comments are organized by sector addressed by the Proposed Scoping Plan and were prepared with contributions from many NRDC staff, including the following:

- Land Use – Amanda Eaken, Justin Horner
- Forests – Peter Miller, Helen O'Shea
- Industry – Diane Bailey, Avinash Kar, Miriam Rotkin-Ellman, Tom Singer
- Water – Ronnie Cohen, Noah Garrison
- Electricity and Natural Gas – Lara Ettenson, Nick Zigelbaum, Kristin Grenfell
- Green Building – Nick Zigelbaum
- Waste and Recycling – Darby Hoover
- Vehicles and Fuels – Simon Mui, Roland Hwang, Diane Bailey
- Cap-and-Trade Program – Kristin Grenfell
- Economic Analysis – Peter Miller
- Public Health Analysis – Diane Bailey, Avinash Kar, Miriam Rotkin-Ellman

II. LAND USE AND REDUCING VEHICLE MILES TRAVELLED

NRDC appreciates the significant additional time and attention CARB has committed to its consideration of land use, and is pleased that the 2020 reduction goal for the sector has been increased from that proposed in the Draft Scoping Plan. NRDC is also pleased that CARB has adopted the framework outlined in SB 375 and has deferred to SB 375's target-setting process for a definitive reduction target. NRDC believes these steps put California on its way to realizing the full benefits of better land use and transportation policy.

Nevertheless, NRDC believes that the 5 MMT target is still too low, and we urge the Board to adopt a higher target for the plan. The Proposed Scoping Plan underestimates land use's potential to lead to significant 2020 reductions and, equally seriously, fails to put California on the right track for 2050. NRDC fears that a low target will inevitably minimize the targets assigned to regions under SB 375, and will send a signal nationally and internationally that California believes land use and transportation are at best marginal approaches to combating climate change.

The Proposed Scoping Plan's 5 MMT target was based on a 4% VMT reduction from land use derived from a single recent review of 20 modeling studies from California, other states and Europe ("the UC Berkeley study").[1] The 4% VMT reduction number was simply the mid-point of a range of modeled VMT reductions from 2% to

[1] *Proposed Scoping Plan*, p. 50, citing: Rodier, Caroline, "A Review of International Modeling Literature: Transit, Land Use and Auto Pricing Strategies to Reduce Vehicle Miles Traveled and Greenhouse Gas Emissions," UC Berkeley, Transportation Sustainability Research Center, August 2008).

6%. The Scoping Plan does not explain why the midpoint is any more supportable than either of the extremes of the range.

NRDC believes there is a sufficient scientific basis to support a higher target, particularly if CARB includes complementary policies such as congestion pricing and Pay As You Drive insurance from the Draft Scoping Plan's "Measures Under Consideration." As the UC Berkeley study itself states, "combined land use, transit, and pricing policy measures would bring significantly great reductions both in the shorter and longer-term horizons."[2]

NRDC recommends a 2020 range for Regional Transportation-Related Greenhouse Gas Targets of **11 – 14 MMT**. This range is based on research done specifically for the Scoping Plan by Professor Reid Ewing, the author of *Growing Cooler*, the definitive scholarly work on the relationship between urban development and climate change.[3] Unlike the UC Berkeley study, which draws conclusions from a survey of regional modeling studies from different states and nations with widely differing circumstances, Professor Ewing's analysis is based upon historical data related to population, travel mode, density and other factors specifically derived from California's metropolitan areas over a period of more than 20 years. The following table summarizes Professor Ewing's conclusions:

	CO2 Reduction
VMT Reduction with Compact Development	4.1 - 5.7 MMT
VMT Reduction with Improved Transportation Investment	4.0 MMT
VMT Reduction with Measures Under Evaluation (PAYD, Congestion Pricing and Public Education)	3.3 - 4.6 MMT
TOTAL	**11.4 – 14.3 MMT**

The higher VMT reduction attributable to compact development reflects recent and projected housing market and demographic shifts that will increase demand for a "smarter" product going forward (although the low end of the range still assumes that half of California's development until 2020 will be "development as usual") The Improved Transportation Investment reduction is derived from a prioritization of transportation funding for public transit, which NRDC believes is likely through the SB 375 planning processes. The Measures Under Evaluation include those mentioned in the Draft Scoping Plan, which include Pay As You Drive Insurance, regulations for which are expected to be issued by the Insurance Commissioner within a year, and Congestion Pricing.

Adopting a target within the range presented by Professor Ewing offers an aggressive and realistic target for 2020 and sets the stage for even more reductions in 2050. A target within this range will send a clear signal to the SB 375 process, and communicate to states and countries looking to California that land use and transportation are critical and promising paths to reducing global warming pollution.

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[2] *Ibid*, p. 20.

[3] Ewing, Reid and Arthur Nelson, "CO2 Reductions Attributable to Smart Growth in California," University of Maryland National Center for Smart Growth & University of Utah, September 2008. Available at http://www.climateplanca.org/ewing_analysis.pdf.

III. FORESTS

California is taking a landmark step by including the forest sector in AB 32 implementation. Other climate change initiatives in the United States and internationally have not taken full advantage of the climate benefits of forest ecosystems, and therefore CARB is in a position to establish rigorous, precedent-setting forest climate strategies that are based on solid science.

While we applaud this effort, the Proposed Scoping Plan, as currently drafted, lacks the necessary clarity and scientific basis to achieve the full climate benefits California's forest sector can produce. The current draft of the plan also fails to include the environmental safeguards that are necessary to prevent unintended negative impacts to California's diverse and productive forests. Our specific concerns are outlined below.

- The assertion that mechanical fuels treatment (as distinct from forest biomass production in the energy sector) is an emission reduction measure is speculative and unfounded. It should not be portrayed as a viable measure in the Scoping Plan. CARB should foster rigorous investigation of the full cycle carbon effects of such treatment and be prepared to recalibrate forest and energy sector strategies in keeping with the results.
- The emphasis placed on near-term opportunities from using residual forest wood waste from fuels management to displace fossil fuel in energy generation ignores the environmental safeguards critical to insuring that biomass fuels actually deliver a climate benefit and do not degrade California's important and unique forest ecosystems.
- The Scoping Plan fails to identify an effective management and funding structure for program design and implementation.
- There is no clear statement of how each of the measures and funding resources would be employed and would contribute to the target emissions reductions.
- The Proposed Scoping Plan should include measures that address consumption of forest products, such as recycling and wood use efficiency, and should include a Public Goods Charge on forest products.

A. Fuels Management is Speculative, Unproven, and Costly and Should Not be Included in the Plan

The Proposed Scoping Plan Appendices refer to fuels management as a measure that can (i) provide emission reductions by reducing fire risks through mechanical fuels treatment (p. C-167), and also (ii) produce biomass to substitute for petroleum-based transportation fuels and electricity generation (p. C-167). These two objectives are dealt with separately below.

1. Emission Reductions Through Mechanical Fuels Treatment

While fuels management has a valuable role to play in protecting human life and property in the immediate vicinity of communities, the Proposed Scoping Plan asserts that mechanical fuels treatment can provide emission reductions by reducing the risk of severe fires in the general forest. For example, Appendix C claims that "fuel

management implementation approaches … will provide guaranteed reductions in 2020." (p. C-167). In fact, for reasons described below, fuels thinning may actually increase emissions. CARB is therefore correct in acknowledging elsewhere in the Appendix that "Quantification of the GHG benefits associated with avoiding wildfire through fuels treatment is difficult." (p. C-171).

Thinning for fuels management performed away from communities presents three categories of negative carbon impacts. Thinning in the general forest is done in the hope of moving forests from infrequent severe fires back to frequent lower intensity ones.[4] However, the little work that has been done comparing overall carbon emissions from long and short interval fire regimes suggests that total CO_2 emissions from several lighter burns exceeds what a single more intense one produces.[5]

Second, thinning reduces standing biomass, and therefore carbon, in the forest. Over time, some grows back. But, at least in mature forests, average carbon sequestered in a thinned forest is very likely to be much less than in an unthinned one.[6] And third, because forest thinning is performed with petroleum-fueled equipment in relatively remote locations, there are substantial process emissions of carbon to be accounted for.

The net result is that forest thinning away from communities likely increases fire emissions over time, reduces sequestered carbon, and causes substantial fossil fuel emissions. Partial recoupment of the lost carbon may be achievable by utilizing thinnings as a biomass source. However, to offer a net climate benefit, the energy produced would have to displace enough fossil fuel to more than offset these three negative effects, plus the process emissions associated with transporting and processing the thinnings.

The case for biomass sourcing from general forest thinning is further weakened by its speculative impact on future forest wildfire behavior. While thinning is widely believed to reduce subsequent fire intensity, the evidence so far is mixed at best. As Forest Service researchers reported in 2006, "information comparing fire behavior and fire effects on treated versus untreated forest stands following wildland fire remains

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[4] See, e.g., Western Governors Association. 2008. Strategic Assessment of Bioenergy Development in the West Biomass Resource Assessment and Supply Analysis for the WGA Region Final Report. p. 15 ("Thinning of timberland with high fire hazard contributes to forest sustainability by reducing the risk of uncharacteristically severe fire. By conducting a thinning, the intent is to move toward a natural fire regime pattern with natural recurrence of less severe fire"). As a pre-eminent group of forest ecologists wrote to President Bush several years ago: "Whatever restoration measures are undertaken, preventing the re-emergence of fire problems will require a commitment to manage with fire rather than simply trying to exclude it in the future." Christensen, N, et al. 2002. Letter to President George W. Bush. Available online at: http://docs.nrdc.org/land/lan_07062801g.pdf.

[5] See Matthew Hurteau & Malcolm North, 2008, Fuel treatment effects on tree-based forest carbon storage and emissions under modeled wildfire scenarios. Frontiers in Ecology and the Environment e-View. doi: 10.1890/080049. Hurteau and North modeled carbon impacts from various hypothetical thinning and fire regimes. Their Figure 1 projects that a single wildfire once in a hundred years in an unthinned Sierra Nevada mixed conifer forest would emit about 400 tons of carbon/hectare (scenario "a"). In a thinned forest with prescribed burns every 20 years (scenario "d"), total emissions from all fires would be around 500 tons/hectare. More generally, Hurteau and North find that in every case they analyzed, "prescribed-burn treatments [have] higher totals then their unburned, paired treatment." (p.3)

[6] See id., Figure 1. Hurteau and North's non-thinning scenarios "a" and "b" both average over 350 tons C/ha over the 100-year analysis timeframe while the thinning scenarios "c" through "f" average at most 301 tons C/ha. (personal communication with M. Hurteau).

largely anecdotal."[7] The only study we are aware of that systematically reviewed fire behavior on comparable thinned and unthinned stands in the Sierra Nevada found that, "[t]hinned areas predominantly burned at high severity, while unthinned areas burned predominantly at low and moderate severity."[8]

Thinning in the immediate vicinity of homes presents a somewhat different case. Plainly needed to protect structures[9], in contrast to restoration thinning it does not aim to re-establish frequent fire, can be maintained by homeowners, and entails limited process emissions.

This is a very complicated and important issue, and we strongly support the development of a science-based program to reduce catastrophic fire and its associated impacts.[10] **The essential point for purposes of the AB 32 Scoping Plan is that, given current knowledge, thinning away from homes cannot be generally assumed to provide climate benefits, and in all events does not hold the key to community safety.**

2. Forest biomass for use in bio-power and bio-fuel production

Appendix C states that the strategy of using forest biomass as an energy fuel supports the goals of the Bioenergy Action Plan by satisfying the growing demand for renewable energy sources, and helps the state meet its bio-power objectives, including the Renewable Portfolio Standard. Specifically, the Proposed Scoping Plan states that this strategy focuses on the "untapped biomass resources to produce transportation fuels, electricity generation, and biogas including enhancement of the supply of biomass through fuel hazard reduction." (p. C-134)

The forest sector Bioenergy strategy should explicitly incorporate environmental safeguards essential for insuring that the target is not achieved at the expense of California's state, federal and private forest ecosystems and that it is fully consistent with the definition of "renewable biomass" as set forth in the federal Renewable Fuels

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[7] Cram, D.S., T.T. Baker, and J.C. Boren. 2006. Wildland Fire Effects in Silviculturally Treated vs. Untreated Stands of New Mexico and Arizona. Research Paper RMRS-RP-55. Fort Collins, CO. U.S. Forest Service, Rocky Mountain Research Station. p. 1.

[8] D.C. Odion. 2006. Fire Severity in mechanically thinned versus unthinned forests of the Sierra Nevada, California. In: Proceedings of the 3rd International Fire Ecology and Management Congress, November 13-17, 2006, San Diego, CA. Online at: www.emmps.wsu.edu/2006firecongressproceedings/Extended%20Abstracts%20PDf%20Files/Poster/hanson.pdf. The strongest case in an empirical study we are aware of for thinning in California forests comes from: Skinner, C.N., M.W Ritchie, and T. Hamilton. In press. Effect of Prescribed Fire and Thinning on Wildfire Severity: the Cone Fire, Blacks Mountain Experimental Forest. Proceedings 25th Vegetation Management Confer ence, Jan. 2004, Redding, CA. Online at www.fs.fed.us/fire/fireuse/success/R5/ConeFire-Skinneretal.pdf. pp.9-10. This review of research thinning in an experimental forest in Northern California found systematic reduction of fire intensity following thinning. An important study, its applicability is limited in part by the fact that it did not compare thinning to prescribed fire only treatments, and did not examine thinning as done in the field by commercial logging crews without scientific supervision.

[9] See Mall, A. and F. Matzner. 2007. Safe at Home: Making the Federal Fire Safety Budget Work for Communities. NRDC. NY, NY. Available online at www.nrdc.org/safeathome.

[10] For a detailed discussion of this issue and the current state of empirical evidence bearing on it, see: Testimony Of Nathaniel Lawrence, Natural Resources Defense Council, On S. 2593, The Forest Landscape Restoration Act, Before The Committee On Energy And Natural Resources Of The United States Senate, On April 1, 2008, available online at: http://www.nrdc.org/land/lan_08040101.asp.

Standard (RFS) passed in the Energy Independence Security Act of 2007, with additional protections for natural resources unique to California. The biomass sourcing protections contained in the RFS definition of renewable biomass were carefully crafted through a broad stakeholder process to provide a minimum level of protection for wildlife habitat, natural forests, native grasslands, and important public lands, while allowing biofuels requirements to move forward.

AB32 must not inadvertently incentivize practices that negatively impact sensitive ecosystems or require the conversion of natural forests and native grasslands to produce biofuels. Such unintended incentives would put these important natural lands at risk and conflict with the primary purpose of AB 32, to reduce global warming pollution. Within the context of the Low Carbon Fuel Standard, an early action item under AB 32, we recommend that any biofuel that does not meet the definition of "renewable biomass" be scored the same as the petroleum baseline or its current fuel cycle emissions, whichever is higher. It is important to understand the following of our recommendation:

- Including a definition of renewable biomass in AB32 is not equivalent to a ban on the use of such fuels in California. Rather, it simply ensures that AB32 does not provide an incentive to produce fuels that harm California's forests and other sensitive ecosystems.
- The RFS protections do not significantly affect what is likely to be the most economic resource base for biofuel production such as, existing tree plantations and slash and pre-commercial thinnings on private forestlands.
- The exclusion on the use of thinnings from federal forestlands outside of wildland urban interface zones is consistent with current science, which fails to show an overall greenhouse gas (GHG) benefit from fuels management in the general forest.
- The RFS protections allow for the use of biomass from wildland/urban interface zones where thinning for wildfire protection is needed for community protection.

California must adopt similar safeguards, to ensure that biomass resources for biofuels and electricity generation don't become just another dirty fuel.

B. The Scoping Plan should identify an effective management structure for program design and implementation in the Forest Sector

A variety of California state agencies have expertise and data relevant to the implementation of forest sector strategies including CARB, the Resources Agency, the Department of Fish and Game, Cal Fire, and the Board of Forestry. To promote clarity, efficiency and effectiveness among these agencies and other stakeholders, CARB must develop an effective management structure for the evaluation and eventual implementation of forest climate strategies.

The current proposal in the Scoping Plan to assign significant responsibilities to the Board of Forestry (BOF) needs careful re-evaluation. While the BOF has important expertise to offer, four of the nine BOF board members are required by state law to "represent and further the interests" of the forest products and range livestock

industries.[11] California needs AB32 strategies that work for the forest products industry. However, decisions about regulations, incentives, and targets must give first precedence to their effectiveness in meeting the State's ambitious emissions reduction commitment. Groups with significant industry ties are properly contributors to the AB 32 process but not ultimate decision makers. Accordingly, CARB must develop an effective management strategy that addresses BOF participation without putting the Board in the untenable position of regulating how its members are apportioned and credited for the forest sector's contributions to AB32 solutions.

C. Sustainable Forest Targets are Ambiguous, Unclear, and Poorly Defined

The Proposed Scoping Plan Appendices present a "Sustainable Forest Target" with a 5 $MMTCO_2E$ reduction target and a cost estimate of $50 million/year, with the Board of Forestry and Fire Protection proposed for the lead agency, and a set of "Opportunities for Additional Forest Reductions" with a minimum of 2 $MMTCO_2E$ as a target, no cost estimate, and a different lead agency.

The Scoping Plan should include a clear description of the measures that will be used to achieve the forest sector target that includes the cost, emission reduction estimates, and funding sources for each measure. The Scoping Plan should also include a clear description of the process and timeline that will be used to develop and implement CARB's forest sector strategy.

D. Measures to address forest product consumption should be included in the Scoping Plan

Given that approximately 80% of California's consumption of wood products is from out-of-state imports, any credited emission reductions from CARB's proposed measures related to California's forestlands are likely to be more than offset by increased emissions from imported wood products. The limited set of measures in the plan that focus on California forestlands exclusively won't affect total levels of consumption or disposal. In addition, the failure to account for total forest sector emissions facilitates development of a forest sector strategy that results in illusory and inadequate emission reductions. By ignoring emissions from wood products, the Proposed Scoping Plan suggests that the focus of a monitoring and inventory initiatives should only be on policies that affect California forestlands.

As NRDC recommended in our October 1, 2007 proposal to the Scoping Plan process, the forest sector strategy in the Scoping Plan should focus on total emissions from the forest sector, including emissions from imported products, and should include measures to reduce emissions from consumption such as improvements in wood use efficiency and recycling.[12]

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[11] For a detailed discussion of this issue and the current state of empirical evidence bearing on it, see: Testimony Of Nathaniel Lawrence, Natural Resources Defense Council, On S. 2593, The Forest Landscape Restoration Act, Before The Committee On Energy And Natural Resources Of The United States Senate, On April 1, 2008, available online at: www.docs.nrdc.org/land/lan_08040101A.pdf.

[12] Natural Resources Defense Council: *Forest sector public goods charge and incentive-based regulatory framework*, submitted to California Air Resources Board on October 1, 2007. Available online at: http://www.arb.ca.gov/cc/forestry/forest_scoping/electronic_submittals.pdf.

E. The Scoping Plan should propose adoption of a forest product public goods charge

As described in NRDC's October 1, 2007 proposal to CARB, a Public Goods Charge (PGC) on forest products could generate revenue of approximately $500 million/year to invest in emission reductions, increased sequestration and forest sector R&D. Without an independent funding source such as a PGC, there is no clear source of funding to achieve the proposed forest sector target, and CARB will miss the opportunity to achieve substantially greater emissions reductions from the forest sector. Such a charge should also be considered as a partial solution to the pressing need for funding to ensure successful administrative implementation of AB32. We strongly urge CARB to include adoption of a forest product PGC as a recommendation in the final Scoping Plan.

IV. INDUSTRY

We commend CARB for recommending four new measures for the industrial sector, given that this sector represents a full fifth of the global warming pollution in California. However, these measures only address a tiny fraction (1.4 $MMTCO_2e$) of the almost 20 MMT CO_2e of reductions in this sector. Therefore, CARB may be foregoing a substantial opportunity for much greater global warming pollutant reductions that CARB itself identified in the Draft Scoping Plan.[13] If reductions for the industrial sector are ultimately achieved within a cap-and-trade program, a substantial portion of the potential associated co-pollutant reductions may be lost. The addition of several key facility-specific reductions from the industrial sector to this plan would not only make great strides in providing health protections to communities, these improvements would also meet AB 32's goals of maximizing social benefit and achieving co-pollutant reductions. Specifically, we recommend an improved industrial audit measure including global warming pollutant reduction targets, and the inclusion of the previously adopted commitment for the cement sector. Below we provide more details supporting these critical improvements.

A. A Balanced, Health-Protective Approach, Relying on a Comprehensive Package of Measures

NRDC has consistently supported a comprehensive package of measures grounded in a foundation of direct regulations throughout all the state's sectors. A strong foundation of direct measures is especially important in the industrial sector. Industrial facilities are often situated in the most vulnerable communities that are disproportionately impacted by air pollution. In addition, global warming impacts, such as heat waves and increased air pollution, are likely to deeply exacerbate public health problems, especially in the most vulnerable communities least equipped to deal with these impacts. Many of California's communities of color and low income communities have been and continue to be disproportionately impacted by pollution from refineries in particular and the industrial sector in general. For example, of the seventeen refineries in the Los Angeles

[13] *See* Attachment A to Draft Scoping Plan, Public Health and Environmental Benefits of Draft Scoping Plan Measures at A-71 to A-72.

area and Bay Area, fifteen are situated in low-income communities and most are also in communities of color, affecting almost one million people.

Direct regulations reduce both greenhouse gases *and* air pollution and ensure basic health protections in the communities that need them most. In contrast, a cap-and trade-program operating alone without complementary direct regulations for the industrial sector could not guarantee any health protections at the community level. Therefore, including additional direct regulations would provide a health protective platform for a cap-and-trade program, benefiting the most vulnerable communities. This balanced policy approach would meet AB 32's call to design regulations in a manner that is equitable and to direct investments towards vulnerable communities. We are concerned that these protections will not be realized if the industrial sector were to achieve global warming pollutant reductions almost exclusively through trading.

The comprehensive approach taken in the Proposed Scoping Plan for the electricity and transportation sectors stands in sharp contrast to the apparent sole market focus of the industrial sector. In the transportation and electricity and natural gas sectors, regulations aimed at renewable fuels and energy efficiency co-exist with the cap-and-trade program. The Plan states that both "required measures and other cost-effective actions by capped sectors will contribute toward achievement of the cap. For example, increasing energy efficiency will reduce electricity demand, thereby reducing the need for utilities to submit allowances to comply with the cap and trade program."[14] However, for the industrial sector, the approach is almost exclusively focused on participation in a cap-and-trade program. While the Plan includes four direct regulations, these are very minor measures focused on emissions that are not covered under the cap, namely fugitive emissions.[15] The Plan repeatedly suggests that that if a category of emissions is covered under the cap, it would not be covered by direct regulations for that category, setting up an either/or dynamic that is not raised for other sectors.[16] Given the Plan's conclusion that the different policy mechanisms can and should co-exist for some sectors, it is unclear why the industrial sector does not follow this approach and instead relies on a cap-and-trade program at the expense of direct regulations. We continue to believe that these policy mechanisms can and should co-exist, with cap-and-trade providing additional reductions to add to a strong base of direct measures.

It is incumbent on CARB to maximize the health benefits from global warming pollution reduction policies, as AB 32 directs. We applaud the health benefits that are quantified in the Proposed Scoping Plan (400 premature deaths avoided, $2.2 billion in health cost savings).[17] However, many direct regulations were left out of the Proposed Scoping Plan which, if included, could improve health benefits by over 60%, amounting

[14] Proposed Scoping Plan 28. *See also id.* at 15 ("Within the capped sectors, some of the reductions will be accomplished through direct regulations such as improved building efficiency standards and vehicle efficiency measures.") and 16 ("By itself, a cap-and-trade program alone will not deliver the most efficient mitigation outcome for the state. There is a strong economic and public policy basis for other policies that can accompany an emissions trading systems.")

[15] *See* Proposed Scoping Plan 54-55.

[16] Proposed Scoping Plan 55 ("If the emissions are covered under the cap, ARB will evaluate the need for the measures described here."). *See also* Appendices to Scoping Plan C-153 ("This measure may also eventually address combustion sources that are not captured by the Cap and Trade Program.").

[17] *See* Proposed Scoping Plan ES-11.

to an additional $1 billion in health cost savings.[18] Many of these measures that were left out of the Plan would not only provide significant greenhouse gas reductions and health benefits, but are also cost-negative, according to the economic analysis for the Plan. Even before the health, air quality, and energy savings co-benefits are taken into account, many of these measures actually save industries money. According to the Draft Scoping Plan, six industrial sector measures would have provided $722 million in savings, yet these were excluded from the Proposed Scoping Plan.[19] Therefore, we urge CARB to re-consider the significant, feasible and affordable industrial source measures that were evaluated by CARB but left out of the Proposed Scoping Plan.

B. Recommendation 1: Improve Industrial Audit Measure I-1 to Ensure GHG Emissions Reductions

The Energy Efficiency and Co-Benefits Audits for Large Industrial Sources (Industrial Audit) measure proposed by CARB is a particularly promising approach for taking advantage of these missed opportunities outlined above. By setting a target for reductions from the measure and following up the Industrial Audit with requirements designed to capture the emission reduction opportunities identified by the audits, CARB can effectively harness the emission reductions (and co-benefits) from the measures evaluated in the Draft Scoping Plan. However, before this measure can deliver on its potential, it needs significant improvements. We reiterate here our previous comments on the measure. The audit as proposed covers less than half of the industrial sources in California. At a minimum, all refineries and cement plants in California must be included, as they are large sources of pollution which represent significant potential emission reductions; there is no reason to exclude these facilities from the audit requirement. Moreover, requiring all facilities to conduct audits will ensure consistency in each industry. We recommend that CARB incorporate into the Industrial Audit the same threshold that will be used for facilities to be included in a cap-and-trade program.

In addition, the results of any audit carried out under this proposed measure should be made publicly available to assure accountability, establish the integrity of the audits, and sustain confidence in the program. The current proposal does not ensure that the public has access to the results of the audits and does not ensure that any emissions reductions will be achieved as a result of the audit. In addition, the audits should move forward much more quickly than the estimated 2012 implementation date, as the information provided by audits will be invaluable to inform the regulatory development process for the entire industrial sector. We recommend that the audit regulation be adopted by the end of 2009 and completed within one year of adoption.

Finally, CARB should establish a target for emission reductions from the Industrial Audit measure. Our analysis shows that the Industrial Audit measure can achieve at least 10 MMT CO_2e of greenhouse gas emissions reductions, and we urge CARB to adopt this as the emission reduction target from the measure. Ten MMT of

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[18] These estimates assume proportional reductions between criteria pollutants and GHGs for the proposed refinery measures, for lack of more specific data. The estimates are based on methods discussed in *Boosting the Benefits: Improving Air Quality by Reducing Global Warming Pollution in California*, NRDC and Redefining Progress, June 2008.

[19] Appendices to Draft Scoping Plan C100-C122, Measures include: Cement Carbon Intensity Standard, Concrete Waste Reduction, Refinery Energy Efficiency, Oil & Gas Extraction, Industrial Boilers and Stationary Engine Electrification.

CO_2e reductions are achievable through a 10% reduction in the projected 2020 business as usual emissions from the industrial sector emissions slated for inclusion under the proposed cap-and-trade program.[20] For the sectors making up the bulk of industrial emissions—oil and gas facilities, hydrogen plants, refineries, and cement plants—feasible and cost-efficient reduction measures at the 10% level are identified in the Proposed Scoping Plan. Therefore, this represents a reasonable emission reduction target from the industrial sector. Individual plant level audits will likely result in the identification of measures that will result in further reductions and energy savings.

The community level assessment of air-quality related public health benefits conducted in conjunction with the Proposed Scoping Plan illustrates the substantial local public health benefits achievable through a 10% reduction in emissions from large industrial sources. This analysis estimated a PM2.5 reduction of 18 tons per year corresponding to a little over 4 avoided premature deaths per year from emissions reductions from refineries and industrial boilers alone. NRDC's statewide analysis of co-pollutant reductions and public health benefits estimated that a 10% reduction in emissions from refineries, cement kilns, and oil and gas facilities would result in approximately 3,400 tons of NOx and 700 tons of PM2.5 reductions preventing almost 50 premature deaths per year statewide.[21] The full scope of public health benefits achievable through implementation of a comprehensive and rigorous audit measure would likely exceed these estimates and represent a significant public health gain for California communities.

C. Recommendation 2: Reinstate Commitment to Cement Sector Measures

Several measures adopted by this Board as part of the Early Action Measures document in October 2007, do not appear in the Proposed Scoping Plan. The Plan must account for these Board-adopted measures, ensuring follow-through on past commitments to implement those measures. In particular, the Board adopted two cement measures (for blending supplementary materials into cement and energy efficiency for cement facilities) that are not among the recommended measures listed in the Proposed Scoping Plan. The Plan could effectively implement these measures while providing flexibility to the cement industry by adopting a low carbon intensity standard, as presented in the Draft Scoping Plan for further evaluation. This measure would give cement manufacturers the flexibility to lower their carbon emissions by maximizing the use of energy efficiency, alternative fuels, and the blending of limestone and supplementary cementitious materials.

These carbon-reducing measures in the cement industry would also have the added benefit of significantly reducing mercury pollution in California, thus also complying with AB 32's requirement to maximize social and co-pollutant benefits. Cement manufacturing is responsible for nearly 90% of all airborne mercury emissions in California; mercury is a potent and persistent neurotoxin that poses a serious health risk

[20] Proposed Scoping Plan. 32.

[21] These estimates assume proportional reductions between criteria pollutants and GHGs for the proposed refinery measures, for lack of more specific data. The estimates are based on methods discussed in *Boosting the Benefits: Improving Air Quality by Reducing Global Warming Pollution in California*, NRDC and Redefining Progress, June 2008.

for Californians. As with many of the other industrial sector measures, the carbon intensity standard is cost-negative even before the health benefits of reduced emissions of criteria pollutants and air toxics like mercury are factored in. We strongly urge the Board to uphold its prior commitment on the cement sector by including the carbon intensity standard in the Scoping Plan. In the absence of a carbon intensity standard for cement, we believe that CARB is obligated to include the two cement measures adopted by the Board last year.

D. Conclusion

To ensure minimum health protections in all communities and meet AB 32's requirement to maximize social and co-pollutant benefits, CARB should set a target for reductions from and improve the Industrial Audit measure to capture many of the potential greenhouse gas and air pollution benefits from the direct regulations evaluated in the Draft Scoping Plan. In addition, the Scoping Plan should include a carbon intensity standard for all cement used in California (or alternatively the two measures adopted by the Board as early action measures last year) to maximize co-pollutant health benefits while making significant global warming pollution reductions. We believe that these two recommendations would provide firm public health protections at the community level throughout California, an important consideration not currently fulfilled by the Proposed Scoping Plan.

V. WATER

NRDC commends CARB for including the water sector in the Proposed Scoping Plan (PSP), and acknowledging the GHG savings associated with improving water use efficiency and relying on less energy intensive sources of water supply. We strongly support the proposed Public Goods Charge (PGC) on water as a means to fund and to accelerate these programs. We also appreciate that the PSP highlights the need, as noted in our comments on the draft Scoping Plan, for the CEC to develop and adopt water efficiency standards for buildings, appliances, and irrigation equipment, as required by AB 662, AB 1560 and AB 1881. (p. C-106.) We urge the CEC to quickly develop a schedule for the necessary standard-setting proceedings.

We have four basic concerns with the water section of the Proposed Scoping Plan. These are:

- assumption that water sector GHG emissions reductions are captured within the electricity sector
- assurances about the existing and ongoing water efficiency programs in the business as usual forecast (BAU)
- lack of measures for and savings from agricultural water efficiency
- need for comprehensive regulations to implement low impact development (LID) and urban reuse.

In each of these four areas, which we discuss more fully below, we would like to see additional detail about how the uncertainties will be addressed.

Our first concern relates to whether GHG emissions reductions from water programs are adequately reflected in the PSP's GHG emissions reductions to be achieved by 2020. The Proposed Scoping Plan currently assumes that water-related GHG emissions reductions are already counted in the measures in the electricity sector, stating that, "greenhouse gas emission reductions from the water sector are not currently counted toward the 2020 goal" (p. 66), and that "while efficiency and recycling have many benefits to the sector, the GHG emission reductions from these measures are accounted for in reduced energy requirements." (p.C-131.) However, the Measure Documentation (Appendix I) does not appear to account for the GHG emissions reductions due to reduced electricity consumption from reducing the volume of water conveyed and treated as a result of water efficiency, water recycling, or urban reuse measures.

For example, NRDC has previously commented that Low Impact Development (LID) has the potential to result in savings of between 227,500 and 408,000 acre-feet of water per year in urbanized southern California and portions of the San Francisco Bay Area alone by 2030. The corresponding reduced need for imported, energy-intensive water supplies would result in energy savings wholly unrelated to increases in the energy efficiency of the water transportation system, or other electricity sector measures currently under consideration. This is also true for reductions in system water losses, or for implementation of landscape water efficiency programs, or other cold water conservation programs. Savings from these measures are not included in traditional utility energy efficiency programs which tend to be limited to reducing water-related energy needs by reducing hot water use or improving water heating or pump efficiency.

We recognize that the PSP acknowledges uncertainty around this issue. Appendix G states that CARB will work with the appropriate agencies to determine whether reductions in GHG emissions from these water measures are additional. However, we urge that CARB undertake this analysis in a timely and transparent manner, so that if, as we believe, the water savings provide incremental GHG emissions reduction benefits, those can be added to the Scoping Plan.

Our second concern is with what appears to be an underlying assumption that the water efficiency programs will be pursued under the business-as-usual (BAU) scenario. The PSP says, "California has a long and successful history of advancing efficiency and conservation in both the Water and Electricity sectors. Without these ongoing activities, business as usual GHG emissions associated with water use in 2020 would be higher than is currently forecast." (p. C-131.) While California does have a successful history in advancing energy efficiency, our record in the water sector has been less impressive. While we certainly hope that any forecasted water savings will be realized, we urge CARB to carefully track and monitor these programs, and to intervene if it appears that the programs are not being implemented and savings are not being achieved at the rate anticipated under the BAU scenario.

Our third concern relates to the treatment of agricultural water efficiency. We are pleased that the recommended actions for W-1: Water Use Efficiency now includes Agricultural Water Use Efficiency as a measure. However, the estimates of potential GHG reductions shown in Table 17 of Appendix C do not include any additional savings to reflect the addition of this measure. The savings estimates in the table are still those that were calculated for urban water efficiency. We urge CARB to identify opportunities

to reduce energy use and GHG emissions associated with agricultural water use, and to add those estimates to the 2020 GHG emissions reduction goal for water efficiency.

Finally, we are pleased to see that the use of LID is included under the Urban Water Reuse measure. As we stated in our previous comments to CARB on the Draft Scoping Plan,[22] LID represents a significant opportunity for climate response under AB 32. Through the infiltration or capture of urban runoff for reuse, LID has the potential to significantly reduce California's demand for water from energy- and emissions-intensive imported sources. Use of LID practices can additionally provide benefits with respect to pollution abatement, and flooding and erosion control. While the Reuse Urban Runoff Measure (Measure W-4) reflects an important step towards reducing water-related GHG emissions, CARB must, in collaboration with the State Water Resources Control Board, develop and implement a comprehensive set of regulations that ensure LID is implemented statewide to the greatest possible extent.

In our previous comments, we stated that, "[i]n order to prevent the pollution and other harms that result from urban runoff, the Clean Water Act ("CWA") requires municipalities, counties, and other dischargers to impose 'controls to reduce the discharge of pollutants to the maximum extent practicable,'" (LID Comment, at 5). Because of the "multiple benefits and the robust contributions that LID can make to reducing GHG emissions," the "implementation of LID practices represents the most commonsense means of complying with the law." (LID Comment, at 7.) However, the existence of federal requirements under the CWA does not mean that regulation necessary to meet the ambitious goals of AB 32 is already in effect; to the contrary, few discharge permits issued under the CWA's National Pollutant Discharge Elimination System program in California currently require explicit implementation of LID techniques. Ensuring that the potential benefits of LID are fully realized in the state will require significant input and leadership from CARB, in collaboration with the State Water Resources Control Board, to develop new regulation, not simply reliance on existing or ongoing measures.

New regulations proposed by CARB and the State Water Resources Control Board must require infiltration or capture of urban runoff at developments ranging in scale from individual single family residences to multi-acre commercial installations, and at industrial, government or public use, and other development and redevelopment projects beyond only those commercial and residential projects identified in the proposed Measure. NRDC has consistently demonstrated, supported by expert analysis, that LID practices are cost-effective and may be feasibly implemented at a wide range of development types and scales.[23] Given the obvious and manifold benefits to be derived from the use of LID to reduce energy use and GHG emissions related to the use and transport of water in California, this measure warrants a high level of attention by CARB.

[22] See, NRDC Comment on AB 32 Scoping Plan Appendices – Water Sector, submitted as comment on LID, August 11, 2008 ("LID Comment").

[23] See, e.g., LID Comment; Richard R. Horner (2007) Supplementary Investigation of the Feasibility and Benefits of Low-Impact Site Design Practices ("LID") for the San Francisco Bay Area, Attached as Appendix A to *NRDC Comments on Water in Draft Scoping Plan and Appendices*, submitted August 1, 2008.

VI. ELECTRICITY AND NATURAL GAS

A. NRDC urges CARB to work with the California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) to create a definition of zero-net energy that will be used consistently across the state.

While NRDC supports decreasing the energy use of buildings throughout the state, driving towards a target of Zero-Net Energy (ZNE) buildings must be dealt with care. Before any substantial work can be accomplished toward this goal through codes, standards or programs, a clear definition of ZNE must be created. NRDC urges CARB to work with the California Public Utilities Commission and California Energy Commission to create a common definition of ZNE. The ZNE term appears numerous times in the Proposed Scoping Plan and each time has a slightly different definition (p. 42, C-101, C-140, C-143). NRDC suggests that CARB conform the definition of ZNE in the Plan. NRDC supports including in the ZNE definition stringent requirements for energy efficiency, such as 70-80% efficiency beyond current code (p. C-143). NRDC also recommends including in the ZNE definition on- and off-site renewable energy production, both large and small, such as in utility-scale renewables and on-site photovoltaic arrays.

B. NRDC urges CARB to focus on setting comparable aggressive energy efficiency savings goals for all retail providers of electricity, rather than pursuing comparable investments in energy efficiency.

While we agree that sufficient investments are necessary to capture all cost-effective energy efficiency, NRDC urges CARB to focus first on setting comparable and aggressive energy efficiency savings goals for all utilities, rather than focusing on comparable investments. Once the cost-effective energy savings goals are established, we recommend that CARB urge the utilities to invest sufficient funds from both the public benefits charge as well as procurement funding, as required by law under Senate Bill 1037 and Assembly Bill 2021, to ensure that these aggressive goals are met cost-effectively.

C. NRDC strongly supports the Energy Efficiency measures (E-1 and CR-1).

In general, NRDC supports the following strategies in the Proposed Scoping Plan;

- 'Stretch' goals and tiers in the building energy code, possibly housed in the green building code. (p. C-102)
- Emphasis on integrated design as the single most important role for designers and builders. In fact, many projects can avoid costs of energy efficiency and green building altogether simply by planning well in advance. (p. C-102)
- Emphasis on passive solar design, which can be expanded beyond simply solar techniques. (p. C-103)
- Emphasis on existing buildings: "In fact, improving the efficiency of California's existing building stocks is the single most important activity to reduced GHG emissions within the electricity and natural gas sectors". (p. C-108).

- NRDC strongly supports more stringent building and appliance standards and codes. However, we caution against requiring "on-site renewable energy production" (p. C-105) and instead suggest maximizing energy efficiency opportunities by requiring all best available technology.
- The establishment of an environmental performance rating system based on HERS protocol and triggered audits and retrofits. (p. C-108)
- Innovative financing and energy efficient mortgages as necessities to attacking existing building stock. (p. C-109)
- Establishing mandatory levels of energy efficiency for the publicly-owned utilities (p. C-113)

We also strongly support the PSP's highlighting of the need for the CEC to develop and adopt water efficiency standards for buildings, appliances, and irrigation equipment, as required by AB 662, AB 1560 and AB 1881 (p. C-106). We urge the CEC to quickly develop a schedule for the necessary standard-setting proceedings.

NRDC recommends that additional policy tools be pursued to meet the state's energy savings goals and achieve all cost-effective energy efficiency for both electricity and natural gas in California. These additional policies include policies to address energy efficiency in existing buildings, such as time-of-sale information disclosure and energy efficiency improvement requirements, and appliance feebates to encourage greater appliance efficiency and achieve additional savings. We urge CARB to work closely with the CPUC, CEC, and Legislature to develop these policies, which can both work in concert with the utilities' energy efficiency programs as well as the Title 24 standards for new buildings and Title 20 appliance standards.

D. NRDC strongly supports a 33% Renewable Portfolio Standard

NRDC strongly supports the Draft Scoping Plan's recommendation to pursue a 33% Renewables Portfolio Standard (RPS) by 2020 (p.24), and has joined other stakeholders in submitting separate comments in support of the 33% RPS, to be submitted to CARB. This more aggressive RPS will be a central component of achieving the state's GHG emission reduction goals and will provide other benefits for the state. We support codifying this more aggressive RPS into statute, and we support the state's efforts to remove the barriers to achieving increased penetration of renewables.

It is essential that all retail providers be held to the same RPS requirement. Appendix C states that the CPUC and CEC recommended a 20 percent RPS for all retail providers, but does not update this recommendation with the energy agencies' most recent recommendation. The CPUC and CEC's joint *Final Opinion on Greenhouse Gas Regulatory Strategies* states, "We recommend that ARB adopt requirements that by 2020 at least 33% of California's electricity needs be met by renewable resources, and that by 2020 each retail provider obtain at least 33% of the electricity delivered to its customers from renewable resources."[24] The 33% RPS is an important measure to help the state achieve both GHG reductions and co-benefits required by AB 32. The RPS must be applied and enforced evenly and equally for all retail providers across the state.

[24] California Public Utilities Commission and California Energy Commission, *Final Opinion on Greenhouse Gas Regulatory Strategies*, Ordering Paragraph 5, p. 297 (October 22, 2008).

E. NRDC encourages CARB to clarify and/or develop the following Natural Gas strategies in the supporting documentation for the Scoping Plan:

1. NRDC urges CARB to include a recommendation to establish a Natural Gas "loading order" similar to that for the electricity sector.

We urge CARB to encourage the CPUC and the legislature to establish a "loading order" for the natural gas sector that is similar to the "loading order" that already exists for the electricity sector. The top two priorities in the loading order should be: 1) all cost-effective energy efficiency; and 2) renewable alternatives to natural gas, such as biomethane and solar hot water.

2. NRDC urges CARB to include a recommendation for biomethane in the Scoping Plan.

Biomethane is an important emission reduction measure, as biomethane from dairy digesters is a renewable alternative to fossil fuel-based supplies of natural gas. It is missing from the Proposed Scoping Plan. We urge CARB to evaluate potential policies for promoting biomethane as a renewable alternative to natural gas, including:

- Creating a "loading order," as discussed above;
- A Renewable Fuel Standard for end-use natural gas;
- Enabling and encouraging long-term, fixed-price contracts for biomethane;
- Enabling an encouraging interconnection of biomethane sources to natural gas pipelines;
- Developing an appropriate price to be paid for biomethane sold into the pipeline;
- Expanding the Public Interest Energy Research program's focus on RD&D to advance biomethane.
- Partnering with Eurpoean countries with experience in biomethane to improve technologies.

F. Solar Water Heating (CR-2)

We support the use of solar water heating as an emission reduction measure. However, we note that the proposed scoping plan does not make any recommendations for solar water heating beyond the already-existing requirements of AB 1470. We urge CARB to go further. We recommend that CARB work with the California Energy Commission (CEC) during the 2011 Title 24 Rulemaking to incorporate solar hot water into a voluntary "silver" standard level, such as that contemplated by the California Public Utility Commission sponsored Statewide Strategic Plan. As suggested in the Strategic Plan, the silver standard would be a voluntary beyond-code standard that could be used as a reference point for local ordinances and for utility incentive programs, and would eventually be included as part of the mandatory code.

VII. GREEN BUILDING

In general, NRDC supports the following strategies in the Proposed Scoping Plan;

- Defining green building: "'Green Buildings' are designed, built, renovated, operated, and maintained using an integrated approach that creates and ensures a healthy and comfortable environment while maximizing energy and resource efficiency. Factors that are considered when designing a green building include: site selection and development, water and energy use, environmentally preferable products and materials, waste management, and indoor environmental quality." (p. C-138)
- Collaborative development of the green building code and stretch goals. (p. C-140)
- Encouraging local authorities to exceed green building standards and helping locals adopt voluntary parts of CGBSC as mandatory. (p. C-147)

VIII. WASTE AND RECYCLING

The recommendations listed in the Proposed Scoping Plan pertaining to waste/recycling are an improvement from the previous draft, particularly in the acknowledgement of the significant greenhouse gas reductions associated with recycling and composting. We are encouraged by the reference to producer responsibility as essential in meeting waste reduction goals, and by the specific strategies suggested for promoting better management of organic waste. However, while the listed goals are laudable –"Increase waste diversion, composting, and commercial recycling. Move toward zero-waste." (p.62) – there are still not enough specific actions suggested for meeting those goals.

We urge CARB to strengthen the recommendation pertaining to commercial recycling by changing it from a voluntary to a mandatory approach. We suggest the following language change:

> "As noted by ETAAC, recycling in the commercial sector could be substantially increased. ~~This could be implemented, for example, through voluntary or mandatory programs, including protocols, enhanced partnerships with local governments, and provision of appropriate financial incentives.~~ ARB will work with the CIWMB to require any business that generates 4 or more cubic yards of waste per week to implement a recycling program that is appropriate for that type of business. ARB will work with CIWMB to develop and implement these types of programs." (Page 63)

Ideally, the recommendations in this section should also include the following specific policy measures:

- Impose disposal limits on readily recyclable materials for businesses;
- Phase out diversion credits for green waste used as alternate daily cover for landfills (ADC).

One of the greatest opportunities to increase recycling in California is through increased commercial sector and multifamily recycling, as most local recycling programs are geared toward single-family residences. Most large office buildings have readily

recyclable waste streams, including high-value office paper. Given the global warming benefits of recycling and composting, as defined by EPA and others (see, e.g., http://epa.gov/climatechange/wycd/waste/generalinfo.html), it is important for recycling and waste policies to be mandatory – not just voluntary – and to include specific targets and measures to keep organic and recyclable materials out of landfills by increasing waste diversion, recycling and composting efforts in California.

IX. VEHICLES AND FUELS

NRDC believes a comprehensive approach for transportation – one that covers vehicles, fuels, and vehicle travel – is the best strategy to ensure that the transportation sector achieves the necessary reductions to allow the state to meet its 2020 and 2050 emissions limits. NRDC supports an overall framework for the transportation sector that includes the following key design elements:

1. Requirements for each of the "three legs of the stool." These include:
    a. vehicle performance standards,
    b. clean fuels standards such as a low carbon fuel standard, and
    c. standards and measures for VMT reduction;[25]
2. A cap-and-trade program covering transportation fuels.

We are pleased that the Proposed Scoping Plan (PSP) proposes to include these basic elements and we applaud CARB staff for their initial efforts to provide a comprehensive framework. The transportation sector represents the largest contributor of GHG emissions in the state and is projected to grow quickly without these measures. As the PSP shows, measures to reduce GHG emissions within the transportation sector are among most cost-effective in the entire AB 32 portfolio, largely because of the associated fuel savings with most of the measures.[26] These net *savings* range from $6 to upwards of $400 per tonne of CO_2e reduced. Overall, measures in the transportation sector will compose over a third of the overall reductions proposed in the scoping plan and will also involve many of the early action measures.[27] We congratulate CARB for their hard work and vision in addressing emissions from the transportation sector. We believe that CARB has provided the right framework -- one that captures the "three legs of the stool" -- that will enable the state to reach our longer term GHG emissions reduction goals.

Moving forward for the post-2020 time frame, NRDC reiterates the criticalness of including Pavley II vehicle standards, the low carbon fuel standard (LCFS), and fuels in the cap. These measures will provide a large portion of the reductions to meet our AB 32 goals and will be the foundation to achieve much of the reductions in future years. We also reiterate the need to continue developing specific measures to address land use/vehicle miles traveled (VMT), goods movement, and heavy duty and medium duty

[25] See earlier section of these comments on Land Use and Reducing Vehicle Miles Traveled.
[26] Appendix G, *Proposed Scoping Plan*, p. G-1-6. Note these do not include many of the co-benefits associated with co-pollutant reductions, energy security, and the social cost of carbon.
[27] Transportation measures are estimated to reduce a total of 62 MMT CO_2e out of a total of 174 MMT CO_2e in reductions counted toward the 2020 target in the PSP. This does not include additional reductions from vehicles traveling out-of-state such as heavy-duty trucks.

truck GHG tailpipe emissions. These measures are not sufficiently developed and are clearly necessary if California is to remain on a pathway to reach the 2050 targets.

We list our support below for many of the specific measures in the Proposed Scoping Plan and also raise several concerns and provide suggestions to help address these.

A. Measures in the Proposed Scoping Plan that NRDC Strongly Supports

We strongly support the following measures that are included in the Draft Scoping Plan:

1. Pavley I and II vehicle GHG standards [T-1]

California's adoption of greenhouse gas (GHG) performance standards for vehicles will help ensure the deployment of low-GHG emitting technologies at the necessary scale and timeframe to avoid the most severe climate damages. Over the past several decades, strict vehicle tailpipe emission standards have proven effective for overcoming market barriers and ensuring the rapid deployment of cost-effective technologies.

2. Vehicle measures that would further reduce tailpipe GHG emissions. [T-4]

We also support the adoption of standards that would obtain additional reductions beyond those achieved by the Pavley standards. CARB's proposed inclusion of standards for low rolling resistance tires and low friction engine oils is an important addition to the overall program. These measures are highly cost-effective and can be implemented early to achieve near-term emission reductions.

3. Low Carbon Fuel Standard [T-2]

We fully support the inclusion of a low carbon fuel standard (LCFS) as a discrete early action measure. The LCFS ensures that the right market signals are provided early to fuel producers, ensuring that both large GHG emission reductions and petroleum savings are realized. The LCFS is a critical component to overcoming market barriers that currently exist in the fuels market to low carbon renewable and alternative fuels. The LCFS is also critical to disincentivizing increased GHG emissions from high-carbon intensity fuels including tar sands, coal to liquids, and oil shale. Absent the LCFS incentives for low-carbon fuels, high-carbon intensity fuels threaten to offset much of California's AB32 reductions.

4. Goods Movement [T-5 and T-6]

We fully support system-wide efficiency improvements to goods movement and the global warming pollution reduction goal of this measure. As we have commented at length previously, this sector presents numerous opportunities to improve efficiency from our current, outdated approach to transporting cargo. Although many efficiency improvements are long term strategies, they would benefit from planning in the near term as our goods movement system is rapidly growing. We look forward to working closely with staff to design appropriate strategies to meet the goods movement reduction target.

5. Heavy-Duty Vehicle GHG Emission Reduction (Aerodynamic Efficiency) [T-7]

Both medium and heavy-duty vehicle requirements are necessary to ensure that both AB 32 and longer-term GHG reduction goals are met. We are pleased to work with CARB and see the progress it has made to develop regulations to improve aerodynamic drag and rolling resistance. The required retrofits for existing and new long-haul trucks is an excellent first start to simultaneously reduce GHG emission, fuel consumption, and criteria pollutants from the heavy-duty truck fleet. These technologies have been available for some time now on the market, as demonstrated by the success of EPA's "SmartWay Transport" voluntary program and are highly cost-effective. We will continue to work with CARB as they develop their rule and as the rule goes before the Board in December.

6. Medium and Heavy Duty Truck Hybridization [T-8]

We fully support the measure for hybrid medium- and heavy-duty trucks. Hybrid trucks have already been proven to significantly reduce global warming pollution in "neighborhood delivery" applications. These types of stop-and-go trucking applications are quite common, and we therefore strongly support this measure.

7. Cap-and-Trade Program including transportation fuels.

We fully support the eventual inclusion of transportation fuels under the cap-and-trade program. The inclusion of fuels in a cap-and-trade program will provide additional incentives for the sector to pursue cost-effective reductions and to innovate. We also believe that revenue recycling of the auction funds will be critical to creating the long-term investments needed to develop a truly clean transportation system in California. These investments will ensure California's leadership in innovative, low carbon technologies.

B. Transportation Measures that Should be Included in the Final Scoping Plan

1. Medium and Heavy Duty Truck GHG Emission Measures

NRDC congratulates CARB for its aggressiveness in many of the transportation measures proposed thus far, including on the aerodynamic and rolling resistance rule for long-haul trucks. However, NRDC is disappointed to see that CARB has removed the heavy-duty engine efficiency measure after including it in the Proposed Scoping Plan.

This measure was one of the most cost-effective in the entire AB 32 Draft Scoping Plan, with expected net savings of over $300 per ton CO_2e reduced due to the potential fuel savings. Note that this figure does not include the benefits of reduced conventional pollutant emissions and associated health co-benefits. The PSP states ARB will consider setting standards for heavy-duty trucks if the federal government does not act or if market forces do not produce higher fuel economy.[28] We do not believe that CARB should take a "wait and see" approach on such an important category. California

[28] Proposed Scoping Plan, p. 4. Also see Appendix 1, p. C-69.

is taking action precisely because market forces are not working to address climate change and because the federal government has not taken a leadership role.

As CARB noted in its PSP:

"GHG emissions in 2020 from the transportation sector as a whole are expected to increase from current levels to 225.4 $MMTCO_2E$. This forecasted increase is dominated by increases in emissions from on-road transportation, i.e., passenger cars and *heavy-duty trucks* [emphasis added]."[29]

Emissions from medium and heavy-duty trucks are projected to make up 8% of the entire California GHG emissions inventory by 2020. This is larger than the entire emissions inventory from residential and commercial fuel use combined. Both the U.S. DOE and U.S. EPA have found that substantial reductions from heavy-duty trucks are possible. They estimate that new heavy duty trucks are capable of achieving 40% GHG reductions within a 2015 timeframe. While the current aerodynamic standards are a great start, they represent only about 10% GHG reductions. California needs to push further.

The benefits of doing so are clear in terms of accessing cost-effective GHG emissions reduction opportunities. GHG standards will not only lead to in-state and out-of-state GHG emissions reductions, but will also have large health co-benefits as well.

2. Timing is Critical

CARB is already encouraging fleet turn-over through truck engine standards that reduce both NO_x and toxic diesel particulates. These standards are highly critical for addressing public health effects and reaching air quality attainment. However, given the longevity of the new truck engines that are being developed, it is essential that CARB simultaneously establish GHG standards as well to ensure that we are not locked-into decades of high GHG emitting trucks. Many of the same GHG emissions reduction opportunities can also reduce NO_x emissions and particulate matter. Simply waiting for federal action on medium and heavy duty trucks will miss this large opportunity to co-optimize GHG and criteria pollutant reductions.

NRDC recommends that the Heavy-Duty Engine Efficiency measure be included back into the Final Scoping Plan and that a process be established that identifies the reductions necessary over the long-term from medium and heavy-duty trucks. This process should be used to begin establishing performance-based GHG standards that are technology-forcing. Given the long lifetime of heavy-duty trucks and the slow turn-over of the fleet, if California does not take action now, the state will not be well positioned to achieve its longer term reduction goals over the 2020 to 2050 timeframe, leading to excess emissions. NRDC recommends that CARB develop a long-term action plan that includes the following:

1. Addresses where the medium and heavy duty truck categories need to be in order to achieve the 80% reduction by 2050 targets.
2. Assesses the technical-potential of GHG reductions from these categories for the 2015 to 2030 timeframe.
3. Use this information to begin a rulemaking process that establishes technology-forcing, GHG performance standards for both categories.

[29] Appendix 1, Proposed Scoping Plan, p. F-4.

4. Integrates this plan within the overall goods movement strategy which should also be further developed.

We urge CARB to use this opportunity to establish stricter, technology-forcing standards that are a model for the federal standards to follow. Waiting for the federal process to take its course will likely result in weaker standards being established and no change occurring until the latter half of the next decade.

Overall, NRDC believes that CARB can help strengthen the Final Scoping Plan by making the changes noted here. CARB is on the right pathway to addressing our state's goals by 2020 as required by AB 32 and with some modifications, will be well positioned to address the post-2020 goals. We truly thank CARB for their dedication thus far and encourage staff to continue forward in their efforts to address climate change. NRDC believes CARB has been a key driver in establishing California as a world leader in reducing emissions from the transportation sector.

X. CAP-AND-TRADE PROGRAM

A. General Design

1. A well-designed cap-and-trade program will complement other emission reduction measures.

We support the Proposed Scoping Plan's proposal that a cap-and-trade program would be complementary to other regulations, helping push GHG emissions even lower than could be achieved through direct regulations alone. (see pp.31; C-12) A well-designed cap-and-trade program should work in concert with the state's many other regulatory programs to help California meet our GHG emission reduction goals.

2. A cap-and-trade program should be as broad as possible.

In order to be most effective, the cap-and-trade program should cover as many sectors of the economy as possible. As such, we support the Plan's proposal to include electricity, industrial sources, end-uses of natural gas, and transportation fuels in the cap, covering 85% of California's emissions in 2020. (p. C-16) However, we urge CARB to quickly finalize reporting protocols for end-users of natural gas, in order to enable that sector to be included in the cap-and-trade program as soon as possible.

3. California must ensure that other programs are similarly strict before deciding to link.

We agree that California should work towards creating a regional program to reduce GHG emissions (p.C-11). However, before linking with other systems such as the Western Climate Initiative, California must first ensure that other programs have a comparably stringent program, including a comparably strict cap, comparable verification and reporting requirements, comparable limits on offsets, and comparable enforcement and penalties.

4. A well-designed cap-and-trade program must include strong enforcement and strict penalties for non-compliance.

We agree with the Proposed Scoping Plan's statement that a well-designed cap-and-trade program must include strict penalties for non-compliance. (p.C-11) However, the suggestion that non-complying entities would only have to surrender allowances "equal" to their excess emissions (p.C-12) is inadequate. If a capped entity does not surrender sufficient allowances at the end of a compliance period, it must be required to surrender a multiple of the allowances, as well as being subject to fines, civil and criminal penalties. The penalty should be large enough that no rational entity would choose to pollute and accept the penalty.

B. Distribution of allowances

1. CARB should auction 100% of allowances as soon as possible.

We support the Proposed Plan's goal to auction 100% of allowances. However, we urge CARB to set a timeline for when that goal should be reached. We note that the California Public Utility Commission and California Energy Commission have recommended to CARB to reach 100% auction by 2016.

2. We support CARB's proposed criteria for considering allowance distribution options.

We support the Proposed Plan's list of criteria to use when choosing an allocation methodology and appropriate uses of revenue. (pp. C-20-21) We believe CARB should add one criterion to this list: incentivize a transition to a low carbon economy.

3. Auction revenue must be used to further the purposes of AB 32.

We emphasize, as the Proposed Scoping Plan does, that auction revenue will not be able to be diverted for general purposes. It must be used to further the purposes of AB 32. We support the Proposed Plan's initial list of potential AB 32 related uses for auction revenue. (pp. 70-71) We look forward to helping to further develop this list in the upcoming regulatory process.

C. Offsets

1. If allowed, compliance offsets should be limited to a small percentage of reductions from the capped sectors.

We strongly agree that the use of unlimited offsets could "reduce the local economic, environmental and public health co-benefits and delay the transition to low-carbon energy systems within the capped sectors that will be necessary to meet our long term climate goals." (p.37) We appreciate the improvement on this issue from the Draft Scoping Plan to the Proposed Scoping Plan in changing the suggested quantity limit on offsets from 10% of *total compliance obligations* to no more than 49% of emissions *reductions* from the 2012 cap, and making this limit applicable to each compliance period, rather than the entire program through 2020. We appreciate that this means a *majority* of emissions reductions under the cap-and-trade program will come from the

capped sectors. However, we believe that the *vast majority* of reductions during each compliance period should come from the capped sectors. We urge CARB to further limit offsets to a small fraction of emissions reductions from the 2012 cap. In addition, we urge California to play a leadership role in urging WCI to adopt similarly strict quality and quantity controls on offsets.

D. Cap-and-trade rulemaking

We appreciate CARB's intent to give stakeholders many opportunities to comment in depth on these and other design elements of a cap-and-trade program through a thorough rulemaking process and technical workshops. (pp. 35-36; C-23-24) We look forward to participating in this rulemaking.

XI. ECONOMIC ANALYSIS

AB 32 requires CARB to adopt greenhouse gas emission reduction regulations that "achieve the maximum technologically feasible and cost-effective greenhouse gas emission reductions."[30] In addition, CARB is required to "consider cost-effectiveness" of the regulations it adopts to meet the law's 2020 emissions limit.[31]

The cost-effectiveness framework adopted by CARB in the Proposed Scoping Plan is both consistent with the requirements of AB 32 and economically sensible. In order to meet the emission reduction goals of AB32, CARB has selected a cost-effective bundle of strategies that is necessary to reach the state's 2020 greenhouse gas emission limit. The bundle includes enough measures to achieve the necessary emission reductions, even accounting for a margin of safety. In evaluating the overall cost-effectiveness of the proposed measures, CARB has made an effort to be as comprehensive and accurate as possible given the limited time available. In general, macroeconomic impacts and health benefits have been analyzed and quantified where possible.

We concur with the overall finding that the Proposed Scoping Plan will provide economic benefits in 2020 for the overall state economy as well as to individual households and businesses. The economic analysis in the Proposed Scoping Plan also shows that particularly vulnerable sectors such as low-income households and small businesses will benefit from the plan. Finally, although further and ongoing improvements to the public health assessment methodology are needed as described below, the Proposed Scoping Plan clearly shows that AB 32 implementation will provide significant public health benefits above and beyond existing regulations.

Overall, the Proposed Scoping Plan establishes an appropriate framework for evaluating the economic impact of implementing AB 32. This framework can then be built upon, and specific cost-effectiveness and economic impact analysis will then be fleshed out in more detail in the next couple of years with the development of specific regulations to implement the Scoping Plan.

[30] Health and Safety Code Section 38560.
[31] Health and Safety Code Section 38562(5).

XII. PUBLIC HEALTH ANALYSIS

We appreciate all of the hard work that went into the public health analysis for the scoping plan in a very short timeframe. We understand that more detailed public health analyses will be conducted as detailed implementing regulations are developed but are concerned about the methodology used for the PSP's health analysis. We urge CARB to improve the public health analysis to the extent feasible before adoption of the PSP and to continue to work to improve the methodology as soon as possible. These corrections should not hold up a final Scoping Plan in any way. Below is a summary of recommendations to correct the methodology and address other issues, followed by more details.

- The Community Level Assessment should include an assessment of different co-pollutant emission scenarios that may occur under the Proposed Scoping Plan including at a minimum, a best- and worst-case scenario; the scenarios must incorporate specific information from all major emitters within the community assessed.
- Current health endpoint factors for mortality related to PM must be utilized.
- Health cost savings must be incorporated into the overall economic summary.

The public health analysis does not give an accurate account of potential impacts and benefits because it is based on assumptions that are too general and unsubstantiated. The assessment must be augmented by including a range of scenarios portraying different circumstances that may arise from the implementation of the Scoping Plan as proposed. Specifically, it is inappropriate to ignore all potential emission reductions from the industrial sector in the state and regional health assessments, and then assume an across-the-board ten percent air pollutant reduction due to a cap-and-trade program for major industrial sources in the local assessment. Scenarios exploring potential impacts of a cap-and-trade program and any measures with potential negative impacts must be included in the statewide, regional and local health assessments.[32] However, the scenarios analysis is most critical to the local assessment, where specific information on all major industrial sources in Wilmington should have been included. A cap-and-trade program would not provide certainty of any reductions at the local level since pollution credits could be purchased exclusively from outside the local area that is analyzed. Therefore a "worst-case" scenario of no emission reductions from industrial sources within a cap-and-trade program must be recognized and compared to an alternative scenario where emissions reductions are required at each facility in the study area.

For example, the community level assessment notes that 30 percent of co-benefits in the study area are associated with four major refineries, which translated to three premature deaths avoided in 2020 (p. H-14). This estimate, however, is based on the 10 percent efficiency improvement assumed from a cap-and-trade program, despite the fact that there is no evidence that those four refineries would make improvements rather than

[32] Note that the Plan at H-47 notes that "There are also some potential pathways under consideration… which may have higher associated criteria pollutants or TACs than other potential pathways." Yet the analysis fails to include scenarios evaluating these potentially negative pathways.

purchasing allowances on the market to cover their emissions. There are no assurances that the health benefits of reductions made through a cap-and-trade program will occur in any one specific community. The same flexibility that makes a cap-and-trade program attractive in some respects robs communities of the certainty of health benefits. This is acknowledged in the assessment: "… it is likely that the actual onsite reductions at industrial sources will differ across individual facilities from the assumed uniform 10 percent reduction… The reductions at any one facility could be much greater or lesser than 10 percent. For example, very small or no reductions might occur…"[33] It is precisely these issues that the local assessment must seek to explore further and quantify.

The uncertainty is propagated further for electricity generation, where the assessment "assume[s] for Wilmington the overall 13 percent average in displaced electricity generation,"[34] i.e., the analysis applies the state average to Wilmington, without taking Wilmington's specific situation into account. The state average is irrelevant to the specific situation on the ground in Wilmington, failing to discuss or analyze how many power plants, peakers or related facilities exist currently in Wilmington, the likelihood of any of those getting repowered or otherwise improved or the likelihood of any new sources, such as peakers, sited in the community. Adjusting statewide average figures to the regional or community level renders the analyses worthless in terms of yielding any site-specific information. No resident breathes an "average" air sample.

In addition, potential co-pollutant emission scenarios should be explored to address the uncertainty of the public health impacts of the increase in combined heat and power (CHP) usage proposed in the scoping plan. As the community level assessment notes on H-119, a shift to CHP can "change the location of co-pollutants." No supporting evidence is provided for the assumption, made in the assessment, that a shift between power plant and CHP will be "neutral" for the community of Wilmington. A further exploration of potential health impacts is required for an adequate local level evaluation.

We support the methodology for health impact quantification derived from the Goods Movement Emission Reduction Plan, which was utilized here. However, the methodology needs to be updated to include the most recent health endpoint factors; specifically, recently released mortality factors related to particulate matter should be used.

Finally, as we have noted frequently in past comments, it is important for any economic assessment to account for the associated health and environmental benefits that will result from the implementation of the recommended greenhouse gas measures in assessing the costs of the measure. The cost-effectiveness analysis "must include ancillary costs/benefits, e.g. non greenhouse gas environmental impacts."[35] Specifically,

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[33] Proposed Scoping Plan at H-117.

[34] *Id.* at H-119.

[35] Professor James Sweeney, Precourt Institute for Energy Efficiency, Stanford University, "A Cost effectiveness Analysis of AB 32 Measures," June 3, 2008, p. 8, available at http://www.arb.ca.gov/cc/scopingplan/economics-sp/meetings/060308/sweeney_june_03_carb_presentation.pdf. The Climate Action Team also recommended this approach for including economic and other savings that will result from AB 32 regulations: Climate Action Team, Economics Subgroup, "Updated Macroeconomic Analysis of Climate Strategies Presented in the March 2006 Climate Action Team Report: Final Report," (October 15, 2007), p. 20

we recommend that in the more detailed cost-effectiveness analysis performed in the development of individual regulations, the monetized value of the co-benefits identified for each measure in the public health analysis be subtracted from the cost of that measure.

We look forward to working with staff to strengthen the public health assessment for the scoping plan. We urge careful attention to this assessment, as this will likely serve as a model to other states or entities pursuing global warming pollution reduction programs.

XIII. DE MINIMIS EMISSION THRESHOLD

The Proposed Scoping Plan recommends a de minimis threshold of 0.1 $MMTCO_2E$ annual emissions per source category and states, "ARB and other agencies implementing measures included in the Scoping Plan should carefully consider this de minimis level in developing regulations, and only regulate smaller source categories if there is a compelling necessity." (p. 97) The consideration of this de minimis threshold in this fashion seems reasonable. The ARB and other agencies should also allow for regulations for source categories with rapidly growing emissions that may not exceed the threshold now, but may in 2020 or later.

XIV. CONCLUSION

Again, NRDC is strongly supportive of the Proposed Scoping Plan. We appreciate the opportunity to offer our comments for consideration, and we strongly urge the Board to adopt the plan at its December 11, 2008 meeting.

This approach is also consistent with the United States Office of Management and Budget's guidance for executive agencies: Office of Management and Budget, "Circular A-4: Regulatory Analysis," (September 17, 2003), p. 12, available at http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf.