

May 7, 2007

Dr. Robert J. Sawyer, Chairman  
California Air Resources Board  
1001 I St  
Sacramento, CA 95812

**Re: Heavy-duty Truck Emission Reduction Measure Should Be Included As an Early Action Measure**

Dear Dr. Sawyer:

The undersigned organizations are strong advocates for an aggressive early action measure strategy in the implementation of Assembly Bill (AB) 32. Moving forward quickly to achieve measurable reductions in global warming pollution is vital for mitigating potential climate impacts while the state works toward finalizing its longer term strategy.

We would like to provide more detail on our recommendation in previous comment letters to include heavy-duty truck emission reduction measures as an Early Action measure. We believe there are substantial opportunities to reduce global warming pollution from heavy-duty truck transport and that some of these opportunities may be lost if CARB does not act swiftly.

CARB should analyze potential greenhouse gas (GHG) reductions from every diesel regulation as part of the rule development process, and incorporate specific GHG reductions where feasible. Truck measures to reduce GHGs, however, warrant special attention and specifically, inclusion as an early action measure for several reasons. First, CARB has already begun rule development on two related diesel reduction rules, private truck fleets and port trucks, expected to be completed in spring 2008. Once these rules are adopted, it is highly unlikely that CARB would turn around and re-regulate these trucks to reduce GHG emissions several years later; CARB should seize this opportunity to reduce both diesel and GHG emissions at once. In fact, some of the technologies that can be used to reduce truck GHG emissions, such as aerodynamic fittings, can be retrofit onto vehicles at the same time that exhaust control retrofits are added.

Second, there are several truck technologies that are commercially available now and have already been developed under EPA's SmartWay Transport Program to reduce GHGs. Taken together, the following SmartWay elements could reduce long haul truck global warming pollution by nearly 10 percent: Single Wide Tires, Trailer Aerodynamics, Automated Tire Inflation, and low viscosity lubricants.<sup>1</sup> Additionally, fuel additives and lighter vehicle components could provide further emission reductions.

Third, some technologies that reduce GHG emissions have also been shown to reduce NO<sub>x</sub> emissions. Two studies, carried out to support the SmartWay program, analyzed the emissions

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<sup>1</sup> EPA SmartWay Calculator, [www.epa.gov/smartway/calculator/calculatorexplanation.htm#calculations](http://www.epa.gov/smartway/calculator/calculatorexplanation.htm#calculations) Single-wide tire plus improved trailer aerodynamics together provide an 8% fuel efficiency improvement; automatic tire inflation provides an additional 0.6% efficiency improvement. Low viscosity lube oils can provide an additional 1.5% improvement according to ICF documentation prepared for EPA SmartWay.

performance of trucks equipped with single-wide tires and improved aerodynamics. The results of these studies showed maximum NO<sub>x</sub> reductions from those modifications ranging from 9 to 45 percent, with the greatest reductions occurring on engines equipped with exhaust gas recirculation (EGR).<sup>2</sup> This is particularly important in light of the state's struggle to attain federal air quality standards. For example, the current SIP for PM<sub>2.5</sub> attainment has a 74 ton per day shortfall in NO<sub>x</sub> emissions needed for Southern California alone. The state must consider every potential NO<sub>x</sub> reduction measure possible to attain federal PM standards and protect public health.

We believe the following technologies should be seriously considered under the umbrella of a heavy-duty truck emission reduction Early Action measure:<sup>3</sup>

**Improved Aerodynamics-** Truck aerodynamics can be improved by adding integrated roof fairings, cab extenders, and air dams. The tractor-trailer gap can be minimized by adding side skirts and rear air dams. Single unit trucks can be improved with air deflector bubbles.

**Automatic Tire Inflation Systems-** These systems are particularly effective for fleets or truck owners that have difficulty monitoring tire pressure on a regular basis.

**Single Wide-Base Tires-** Single wide-base tires save fuel by reducing vehicle weight, rolling resistance and aerodynamic drag. These tires can also improve tank trailer stability by allowing the tank to be mounted lower. The weight savings for a typical combination truck using single wide-base tires on the drive and trailer axles ranges from 800 to 1,000 pounds.

**Weight Reduction-** Lighter weight tractor and trailer components, such as aluminum axle hubs, frames and wheels, can reduce truck weight by thousands of pounds. Every 10 percent drop in truck weight reduces fuel use and greenhouse gas emissions between 5 and 10 percent.

**Low Viscosity Lubricants-** Conventional mineral oil lubricants may have too high of a viscosity to effectively slip between and lubricate the moving parts of truck systems. Low-viscosity lubricants can reduce friction and energy losses. Typically, the combined effect of low viscosity synthetic engine oils and drive train lubricants can reduce emissions by at least three percent. Despite the higher cost of synthetic oils, truck owners can save more than \$500 per year and additional savings may be possible due to reduced wear and maintenance.

**Hybrid Vehicle Technology-** This technology could reduce emissions by 30 to 50 percent. It is particularly effective in the medium-duty sector, which typically operates in urban stop-go traffic. Hybrid technology is also now being developed for longer haul trucks, with one manufacturer expecting commercial introduction in 2009.<sup>4</sup>

**Improved Freight Logistics-** Software programs monitoring cargo transport delivery schedules can minimize the miles that a truck drives empty and ultimately remove many empty trucks from

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<sup>2</sup> L.J. Bachman et. al., Effect of Single Wide Tires and Trailer Aerodynamics on Fuel Economy and NO<sub>x</sub> Emissions of Class 8 Line-Haul Tractor Trailers, SAE 2005, paper no. 05CV-45; and L.J. Bachman et. al., Fuel Economy Improvements and NO<sub>x</sub> Reduction By Reduction of Parasitic Losses: Effect of Engine Design, SAE 2006, paper no. 2006-01-3474.

<sup>3</sup> Information taken from EPA's SmartWay Program.

<sup>4</sup> [http://www.greencarcongress.com/2007/03/peterbilt\\_eaton.html](http://www.greencarcongress.com/2007/03/peterbilt_eaton.html)

the road. Shippers, in particular, can use logistics software to ensure full loads to maximize operating efficiency.

**Fuel Additives-** Fuel additives may be able to improve the way diesel fuel is burned in the engine chamber reducing the amount of unburned fuel, and thus reducing pollution and improving efficiency. Any fuel additive must be rigorously tested not only for performance characteristics but also for potential toxic emissions or water quality contamination risks.

We urge CARB to explore all of these truck emission reduction measures, all of which have the potential to pay for themselves through reduced fuel costs. While the California truck fleet contains many short haul trucks traveling shorter distances and at lower speeds than long haul trucks, we believe that the potential GHG emission reductions remain significant for these short haul trucks. CARB should evaluate the potential GHG reductions for both long haul and short haul trucks in more detail as part of the diesel truck rulemakings.

Truck GHG requirements can and should be incorporated into the current diesel truck rulemakings and should be listed as an early action measure. We do not believe that these requirements would delay the diesel rulemaking schedule, as many of the technologies and their benefits have already been evaluated by US EPA. We would be happy to work with staff and aid in development of such important measures to reduce global warming pollution from trucks.

We thank you for your consideration.

Sincerely,

Diane Bailey  
Natural Resources Defense Council

Don Anair  
Union of Concerned Scientists

Bonnie Holmes-Gen  
American Lung Association of California

Bill Magavern  
Sierra Club California

Avinash Kar  
Center on Race, Poverty & the Environment

cc: Executive Officer Catherine Witherspoon  
Secretary Linda Adams  
Senate President pro Tem Don Perata  
Assembly Speaker Fabian Nunez