State of California
Environment Protection Agency
AIR RESOURCES BOARD

Notice of Decision

Project Title:	Amendments to the Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants from In-Use Heavy-Duty Diesel-Fueled Vehicles (Truck and Bus regulation)[1]
Project Location:	Statewide
Public Meeting Dates:	December 17, 2010; Agenda Item 10-11-3
Project Description:	The project is amendments to the Truck and Bus regulations originally approved in December 2008 to reduce emissions of diesel particulate matter (diesel PM), oxides of nitrogen (NOx), and other criteria pollutants from nearly one million in-use diesel trucks and buses that operate in California. The amendments simplify the regulation while providing fleets adversely affected by the recession additional flexibility to determine which vehicles to retrofit or replace.
Approved By:	Air Resources Board Executive Order No. R-11-009 Dated: September 19, 2011

This notice is to advise that ARB, as the lead agency, has approved the above described project on September 19, 2011 and has determined that the project will not have a significant adverse impact on the environment (see attached Executive Order No. R-11-009).

In accordance with California Environmental Quality Act and ARB's certified regulatory program, ARB prepared an environmental analysis as part of the Staff Report: Initial Statement of Reasons (Staff Report) for the regulation and Written Responses to Comments on Significant Environmental Issues Regarding the Amendments to the Truck and Bus Regulation (written responses) (see attached documents). The ARB Executive Officer, as the decision-maker for this project, approved the written responses.

[1] The amendments to the Truck and Bus Regulation were noticed as part of the Public Hearing to Consider Proposed Amendments to the Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and other Criteria Pollutants from In-Use On-Road Diesel-Fueled Vehicles, The Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Measure, and the Regulation to Control Emissions from In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks at Ports and Intermodal Rail Yard Facilities. For reasons of administrative efficiency, ARB adopted the amendments to the Truck and Bus regulation independent of the amendments to the other two regulations.

Copies of the Staff Report and written responses, as well as other documents in the rulemaking record, are available at the ARB rulemaking webpage at http://www.arb.ca.gov/regact/2010/truckbus10/truckbus10.htm.

No mitigation measures, findings, or statement of overriding considerations were adopted for this project because the amendments to the regulation will not have a significant adverse impact on the environment.

California Air Resources Board
Attn: Board Administration and Regulatory Coordination Unit
1001 I Street
Sacramento, CA 95814

Certified: Jeannie D. Blakeslee

Date: 9-26-11

Attachments:

- Executive Order No. R-11-009
- Staff Report: Initial Statement of Reasons for the Proposed Rulemaking Proposed Amendments to the Truck and Bus Regulation, the Drayage Truck Regulation and the Tractor-Trailer Greenhouse Gas Regulations
- Responses to Comments on Significant Environmental Issues Regarding the Amendments to the Truck and Bus Regulation

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State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER R-11-009

Adoption of Amendments to the Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants from In-Use Heavy-Duty Diesel-Fueled Vehicles

WHEREAS, on December 17, 2010, the Air Resources Board (the Board or ARB) conducted public hearing after issuance of a Notice of Public Hearing (45-Day Notice) to consider the adoption of amendments to the "Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants from In-Use Heavy-Duty Diesel-Fueled Vehicles (Truck and Bus regulation), title 13, California Code of Regulations (Cal. Code Regs.), section 2025; the Heavy-Duty Vehicle Greenhouse Gas (GHG) Emission Reduction Measure (Tractor-Trailer GHG regulation), title 17, Cal. Code Regs., sections 95301 to 95307, 95309, and 95311; and the regulation for In-Use On-Road Heavy-Duty Diesel-Fueled Drayage Trucks at Ports and Intermodal Rail Yard Facilities (Drayage Truck regulation), title 13, Cal. Code Regs., section 2027;

WHEREAS, the California Environmental Quality Act (CEQA) requires that no project which may have significant adverse environmental impacts may be adopted as originally proposed if feasible alternatives or mitigation measures are available to reduce or eliminate such impacts, unless specific overriding considerations are identified which outweigh the potential adverse consequences of any unmitigated impacts;

WHEREAS, CEQA allows public agencies to prepare a plan or other written documentation in lieu of an environmental impact report or negative declaration (i.e., a functional equivalent environmental document), once the Secretary of the Resources Agency has certified an agency's regulatory program pursuant to section 21080.5 of the Public Resources Code;

WHEREAS, pursuant to section 21080.5 of the Public Resources Code, the Secretary of the Resources Agency has certified that portion of the ARB's regulatory program that involves the adoption, approval, amendment, or repeal of standards, rules, regulations, or plans;

WHEREAS, ARB's certified regulatory program provides that when an action contemplated by the Board may have a significant effect on the environment, ARB staff shall prepare a staff report that shall contain a description of the proposed action, an assessment of anticipated significant long or short-term adverse and beneficial environmental impacts associated with the proposed action and a succinct analysis of those impacts, which shall include a discussion of feasible mitigation measures and alternatives to the proposed action;

WHEREAS, concurrent with publication of the 45-Day Notice, ARB issued an Initial Statement of Reasons (Staff Report) that included an environmental analysis that addressed potential long and short-term environmental impacts related to the proposed amendments given California's severe recession and its impact on operation of heavy-duty vehicle emission sources;

WHEREAS, at the December 17, 2010 public hearing, the Board adopted Resolution 10-44 (copy of which is attached hereto as Attachment 1), which directed the staff to modify the initially proposed amendments that were part of the 45-Day Notice, consistent with the resolution and the suggested modifications presented by staff in Attachment B to the resolution;

WHEREAS, Resolution 10-44 further directed the Executive Officer to make the modifications to the initially proposed amendments to the regulation available for public comment for a period of 15 days, that he consider written comments submitted during the 15-day comment period, make such further modifications as may be appropriate in light of the comments received, and that he should return to the Board for further consideration if he determines that this is warranted;

WHEREAS, Resolution 10-44 also directed the Executive Officer to prepare and approve written responses to comments received, including comments raising significant environmental issues, as required by Government Code section 11346.9, Public Resource Code section 21080.5(d)(2)(D), and Cal. Code Regs., title 17, section 60007, determine whether there are feasible alternatives or mitigation measures that could be implemented to reduce or eliminate any potential adverse environmental impacts, while at the same time addressing the serious economic recession and its impact on industry and residents of the State, make findings as required by Public Resources Code section 21081 if the proposed amendments would result in one or more significant adverse environmental effects, and take final action to adopt the proposed amendments to the Truck and Bus regulation, as modified in the publicly noticed 15-day changes;

WHEREAS, on May 19, 2011, ARB issued the modified regulation, reflecting the amendments considered by the Board and other conforming modifications, which were made available for public comment for a period of 15-days, with the changes to the originally proposed text clearly indicated, in accordance with the provisions of title 1, California Code of Regulations, section 44 (15-Day Notice);

WHEREAS, written comments were received during the initial 45-day comment period and after issuance of 15-day comment period and oral comments were received as part of the testimony taken at the December 17, 2010 Board hearing, and among the comments received were comments that raised potentially significant environmental issues;

WHEREAS, pursuant to the Board's direction in Resolution 10-44, ARB staff has summarized and prepared written responses to comments raising significant environmental issues, (a copy of which is attached hereto as Attachment 2); and

WHEREAS, the Executive Officer has deemed it is necessary to bifurcate the amendments to sections 2025, title 13, Cal. Code Regs., and 95301 to 95307, 95309, and 95311, title 17, Cal. Code Regs. from the proposed amendments to sections 2027, title 13, Cal. Code Regs. to ensure that the amendments to the three regulations covered by the 45-Day Notice are handled expeditiously and become operative as soon as possible.

NOW, THEREFORE, IT IS ORDERED that the recitals and findings contained in Resolution 10-44 are incorporated by reference herein.

IT IS FURTHER ORDERED that I hereby certify that the environmental analysis prepared for the amendments to the Truck and Bus regulation was prepared in accordance with the requirements of ARB's certified regulatory program under CEQA.

IT IS FURTHER ORDERED that I hereby approve each of the written responses to comments raising significant environmental issues as set forth in Attachment 2.

IT IS FURTHER ORDERED that after fully considering the amendments as modified by the 15-Day Notice, the environmental analysis, and the full record before me, I find:

The amendments to the Truck and Bus regulation will not result in any adverse impacts to the environment, and therefore, no mitigation measures, findings or statement of overriding considerations are required;

ARB adopted the Truck and Bus regulation in 2008/2009 to, among other things, reduce the public's health risk exposure to diesel particulate matter (PM), an identified toxic air contaminant, and meet the national ambient air quality standards (NAAQS) established by U.S. EPA for PM 2.5 and ozone by 2014 and 2023 respectively;

The severe, long-lasting recession experienced in the United States and California, specifically, has impacted the number of on-road heavy-duty vehicles operating and total vehicle miles travelled by these vehicles in California, and the consequent emissions from these vehicles is less than ARB forecasted when the Truck and Bus regulation was first considered for adoption in 2008;

The revised inventories for on-road heavy-duty vehicles, combined with the effects of the recession and the emission reductions forecasted to be achieved from the Truck and Bus regulation, as initially adopted in 2008/2009, achieve emission reductions greater than the emission

reductions that California needs to meet its NAAQS emission reduction obligations under the State Implementation Plan (SIP);

Although in the short term, the amendments will result in some foregone emission reduction benefits that would have been achieved absent the amendments to the regulation, the effects of the recession and amendments long-term will result in environmental benefits at least equal to the initially adopted regulation;

Given the revised inventory and the lower emissions caused by the recession, the amendments to the Truck and Bus regulation will not cause emissions to exceed the emission reduction targets of the SIP or the forecasted emission levels that were anticipated by the regulation as initially adopted in 2008/2009, therefore, the amendments will not have a significant adverse environmental effect on air quality.

IT IS FURTHER ORDERED, the amendments to Cal. Code Regs., title 13, section 2025, as set forth in the Final Regulation Order, which is attached hereto as Attachment 3, are adopted.

Executed this 19th day of September 2011, at Sacramento, California.

James N. Goldstene
Executive Officer

Attachments

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ATTACHMENT 1

State of California
AIR RESOURCES BOARD

Resolution 10-44

December 17, 2010

Agenda Item No.: 10-11-3

WHEREAS, the Air Resources Board (ARB or Board) adopted the Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants from In-Use Heavy-Duty Diesel-Fueled Vehicles (Truck and Bus regulation or regulation), title 13, California Code of Regulations (Cal. Code Regs.), section 2025, pursuant to its authority set forth in Resolution 08-43, which is incorporated herein;

WHEREAS, in-use on-road heavy-duty diesel vehicles operating in the state, as a class, remain the largest contributor of emissions from all mobile sources, contribute substantially to violations of the ambient air quality standards for both PM2.5 and ozone, to localized health risk associated with exposure to diesel PM, and to premature deaths associated with exposure to PM2.5;

WHEREAS, California and the nation have been in an economic recession that is deeper and longer lasting than anticipated when the Board approved the Truck and Bus regulation on December 12, 2008.

WHEREAS, the recession has had a significant impact on overall trucking activities and specifically companies that operate on-road heavy-duty vehicles in the normal course of business, with a concomitant reduction in PM2.5 and oxides of nitrogen (NOx) emissions in the state;

WHEREAS, ARB staff has undertaken a thorough review and update of its emissions inventory for heavy-duty on-road heavy-duty diesel vehicles and engines and determined that emissions from such vehicles are substantially lower than estimated in December 2008 when the Truck and Bus regulation was initially adopted;

WHEREAS, ARB staff presented the results of the updated emissions inventory to the Board at the November 2010 Board hearing, and the Board took public comment on the staff presentation and findings;

WHEREAS, the recession has also impacted the activity of in-use off-road diesel vehicles covered by the In-Use Off-Road Diesel-Fueled Fleets regulation (off-road regulation), title 13, Cal. Code Regs., sections 2449 through 2449.3 and that ARB staff has estimated that emissions from vehicles covered by the off-road regulation are also lower than initially estimated when that regulation was adopted in 2007;

WHEREAS, the Board directed staff to develop concurrent amendments to the off-road diesel vehicle regulation and the Truck and Bus regulation that would provide economic relief to both off-road and on-road heavy-duty diesel fleets while continuing to meet the Board's air quality goals and obligations;

WHEREAS, amendments to the Truck and Bus regulation are being proposed to provide additional flexibility and economic relief to truck and bus fleets affected by the regulation;

WHEREAS, on April 23, 2009, the Air Resources Board adopted revisions to California's, State Implementation Plan (SIP) reflecting implementation of the 2007 State Strategy (State Strategy);

WHEREAS, the State Strategy identifies NOx and PM2.5 emission reduction targets that were expected from each control measure identified in the State Strategy; at the time the State Strategy was adopted;

WHEREAS, the commitment in the State Strategy is to achieve aggregate emission reductions from all control measures in the State Strategy; there is no commitment to achieve the emission reduction target for each individual control measure;

WHEREAS, if a particular control measure does not achieve its expected emission reduction target, the State Strategy specifies that the emission reductions can be achieved through additional reductions from other identified measures, or from alternative control measures or incentive programs, as long as the aggregate emission reductions are achieved;

WHEREAS, actual emissions from sources impacted by economic conditions will continue to change over time, and may increase as the economy recovers;

WHEREAS, it is ARB's responsibility to track progress towards achieving the State's aggregate emission reduction commitment in the State Strategy, and if there is a shortfall in emissions reductions as the economy recovers, the State remains responsible for achieving the aggregate emission reductions commitment identified in the State Strategy;

WHEREAS, between January 2010 and October 2010, ARB staff met and worked with affected private industry, school transportation providers including representatives of school districts, and the public, in general, in developing the proposed amendments, held meetings with individual affected stakeholders and industry stakeholder groups, conducted 20 public workshops statewide to discuss the proposed changes to the regulation and changes to the emissions inventories, with one workshop focused solely on school buses;

WHEREAS, with the information and comments received from stakeholders, ARB staff prepared a report, entitled "Staff Report: Initial Statement of Reasons for Proposed

Rulemaking – Proposed Amendments to the Truck and Bus Regulation, the Drayage Truck Regulation and the Tractor-Trailer Greenhouse Gas Regulation (ISOR) released October 20, 2010; this report along with the report, "Staff Report: Initial Statement of Reasons for Proposed Rulemaking – Proposed Regulation for In-Use On-Road Diesel Vehicles," and an associated technical support document, entitled "Technical Support Document – Proposed Regulation for In-Use On-Road Diesel Vehicles," (both released October 24, 2008 and collectively referred to hereinafter as "Staff Report 2008"), and the report "Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles," adopted by the Board on September 28, 2000, constitute the reports required under Health and Safety Code section 39665;

WHEREAS, the ISOR identified and explained the need to amend the Truck and Bus regulation and the feasibility of the proposed amendments;

WHEREAS, the ISOR discussed, to the extent data could reasonably be made available, the factors specified in Health and Safety Code sections 39665(b), 43013, and 43018, including, but not limited to estimates of emissions, exposure, potential cancer risk and non-cancer health effects associated with the operation of in-use on-road heavy-duty diesel vehicles subject to the proposed regulation, technically feasible control options, potential environmental impacts, cost of compliance for all owners and/or operators of in-use on-road diesel vehicles, and cost impacts for ARB implementation of the proposed regulation;

WHEREAS Staff Report 2008 discussed ARB staff's evaluation of the potential risk of exposure to directly emitted diesel PM in the exhaust of heavy-duty trucks in a localized urban area using United States Environmental Protection Agency (U.S. EPA) approved and ARB-recommended air dispersion models, and these evaluations indicate that the overall average potential ambient cancer risk within the localized urban area in the year 2003 is about 375 in a million;

WHEREAS, Staff Report 2008 further discussed the results of ARB staff's evaluations of the non cancer health effects of exposure to primary and secondary PM emissions from the vehicles subject to the proposed regulation, and these evaluations indicate that exposure to these emissions can be associated with premature deaths and other non-cancer health impacts;

WHEREAS, the U.S. EPA in a recently published review of the PM-related health science literature, which is the first part of an ongoing review of NAAQS for PM, concluded that long-term exposure to PM2.5 is causally associated with premature mortality, and that premature deaths associated with exposure to PM2.5 occur at levels as low as 5.8 micrograms per cubic meter, which is considerably lower than the current national standard of 15 micrograms per cubic meter;

WHEREAS, the U.S. EPA risk assessment methodology is the basis for ARB's estimate that 9,200 (7,300 to 11,000. 95 percent confidence interval) premature deaths occur annually in California and that reducing emissions to meet the NAAQS standard would

result in 2,700 (2,100 to 3,300, 95 percent confidence interval) fewer premature deaths annually;

WHEREAS, the ISOR presents staff's proposal that the Board adopt the proposed amendments to the Truck and Bus regulation, as set forth in Appendix A to the ISOR;

WHEREAS, Attachment B contains staff's suggested modifications to the initially proposed amendments, based on staff's further evaluation on the need for additional amendments and on comments received since release of the ISOR;

WHEREAS, the significant elements of the proposed amendments to the Truck and Bus regulation are:

Heavy-Duty Diesel Trucks

A provision that would exempt lighter-heavy-duty diesel vehicles with a gross vehicle weight rating (GVWR) of 26,000 pounds or less from having to meet the PM best available control technology (BACT) requirements of the regulation, and would delay requirements for fleet owners to operate heavy-duty diesel vehicles that are equipped with 2010 model-year certified engines or with engines that are emissions equivalent with 2010 model-year certified engines (collectively referred to as 2010 model-year engines) until 2015 when fleet owners would be required to:

Between January 1, 2015 and January 1, 2020, replace or upgrade engines that are 20 years old or older with 2010 model-year engines; between January 1, 2020 to January 1, 2023, phase-out all 2009 and older model-year engines so that by 2023 all heavy-duty diesel vehicles would be equipped with 2010 model-year engines;

An amended BACT compliance schedule whereby the following actions would be required for heavier-heavy-duty diesel vehicles with a GVWR greater than 26,000 pounds:

Vehicles with 1997 model-year and older engines would be exempt from the PM BACT requirements, but those with engines that are 20 years or older must be upgraded or replaced with a 2010 model-year engine between January 1, 2015 and January 1, 2017; and

Vehicles with 1998 to 2006 model-year engines must be equipped with PM filters between January 1, 2012 and January 1, 2014, and starting January 1, 2020, all 2009 and older model-year engines would be phased out so that by January 1, 2023 all heavier heavy-duty diesel vehicles would be equipped with 2010 model-year engines.

An optional requirement would allow a fleet owner to delay replacement of either a lighter- or heavier-heavy-duty vehicle until January 1, 2020 by equipping the vehicle with a PM filter by January 1, 2014;

An optional phase-in for small fleets with three or fewer vehicles that would exempt the heavier-heavy-duty diesel vehicles in the fleet from the regulation's PM BACT requirements until January 1, 2014 and the 2010 model-year engine requirement until January 1, 2020, if the fleet met the following:

One heavier heavy-duty diesel vehicle in the fleet must meet PM BACT requirements by January 1, 2014; if fleet has two heavier-heavy-duty diesel vehicles, the second vehicle must be equipped with PM BACT by January 1, 2015; and if the fleet has three heavier heavy-duty diesel vehicles, all three vehicles must be equipped with PM BACT by January 1, 2016; and

Beginning January 1, 2020, all heavy-duty vehicles in small fleets must be equipped with 2010 model-year engines according to the proposed amended BACT compliance schedule.

An optional phase-in for large fleets with four or more vehicles would allow heavier-heavy-duty vehicles not to incur all of the compliance costs in one year by allowing fleets to meet the PM BACT requirements on the heavier-heavy-duty diesel vehicles in the fleet at the rate of 30 percent per year from January 1, 2012 to January 1, 2014, after which the remaining 10 percent of the heaver heavy-duty diesel vehicles along with the lighter-heavy-duty diesel vehicles in the fleet must meet the requirements of the BACT schedule starting January 1, 2016; and

A provision that would replace the existing retired vehicle credit with an alternative that would offer economic relief to fleets that have reduced their fleet size since October 1, 2006, by allowing fleets that use the phase-in option for large fleets to reduce their requirements for a compliance year by the same percentage that the fleet has downsized from the 2006 baseline date;

Heavy-Duty School Buses

The proposed amendments would:

Exempt all school buses, except those manufactured prior to the 1977 model year, with a GVWR of 26,000 pounds or less from the regulatory requirements;

Provide a one-year delay in the implementation of the PM BACT requirements for school buses with a GVWR more than 26,000 pounds;

Provide a revised phase-in compliance schedule that would require a school bus fleet to bring 33 percent of the school buses in the fleet into compliance with PM BACT by January 1, 2012, 66 percent by January 1, 2013, and 100 percent by January 1, 2014; and

Provide credit option provisions similar to other vehicle categories.

Additional Credit Provisions for Heavy-Duty Trucks and School Buses

Amendments to the existing credit for early PM retrofits that would allow a fleet that has installed a PM filter early to be able to treat another vehicle as compliant until January 1, 2017;

Amendments to the existing credit so that fleets that purchase hybrid vehicles, alternative fuel vehicles and heavy-duty pilot ignition engines any time prior to January 1, 2017, would be able to treat another vehicle as compliant until January 1, 2017; and

Not allow credits for vehicles purchased to comply with any other California in-use regulation, or partially state funded vehicles, replacements, or retrofits according to the funding program guidelines.

Drayage Trucks

The proposed amendments to the drayage truck requirements in the Truck and Bus regulation would:

Move forward the initial date that drayage trucks, which are presently subject to the Regulation to Control Emissions from In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks, title 13, Cal. Code Regs., section 2027, become subject to the provisions of the Truck and Bus regulation from January 1, 2021 to January 1, 2017, and

Allow a fleet owner to include all of its drayage trucks in the fleet for the purpose of complying with the proposed phase-in compliance option for large fleets in the Truck and Bus regulation.

Agricultural Fleets

The proposed amendments would:

Extend the initial reporting deadline for heavy-duty diesel agricultural vehicles to March 31, 2011, and extend the initial compliance date to January 1, 2012 for heavy-duty diesel vehicles in the agricultural fleet that do not qualify for the agricultural vehicle provisions;

Clarify definitions and extend the specialty vehicle designation now limited in the existing regulation to feed trucks or mixer-feed trucks to all livestock feed trucks; and

Add an optional phase-in schedule for log trucks that would exempt such trucks from the PM BACT requirements, but would require that fleet owners phase-in the requirement that log trucks be equipped with 2010 model-year engines at the rate of 10 percent of the log truck fleet per year from January 1, 2014 to January 1, 2023.

Other Amendments

Proposed deletion of the following provisions: BACT percentage limit option, fleet averaging option, exemption for cab-over-engine truck tractors, NOx mileage exempt vehicles, and requirements for motorcoaches.

WHEREAS, in accordance with the authority set forth above, staff evaluated various control options such as making no change to the existing regulation, retaining the existing regulatory structure, and establishing requirements based on economic indicators and determined that these alternatives would do one or more of the following:

not provide sufficient economic relief to fleets; make the regulation more complex; unfairly provide advantages to certain business sectors; and create planning uncertainty;

WHEREAS, the Board has considered the impact of the regulation on the economy of the State, and the potential adverse economic impacts on California business enterprises and individuals;

WHEREAS, the Board has considered the community impacts of the proposed regulation including environmental justice concerns;

WHEREAS, the California Environmental Quality Act (CEQA) and Board regulations require that no project which may have significant adverse environmental impacts be adopted as originally proposed if feasible alternatives or mitigation measures are available to reduce or eliminate such impacts;

WHEREAS, a public hearing and other administrative proceedings have been held in accordance with the provisions of chapter 3.5 (commencing with § 11340), part 1, division 3, title 2 of the Government Code;

WHEREAS, in consideration of the information in the public record, including the ISOR, updated on-road vehicle emissions inventory, written comments, and testimony provided at the November and December 2010 hearings, the Board finds that:

In-use on-road diesel vehicles that operate in the State – whether based in California or not – continue to be significant contributors of diesel PM and NOx emissions, which California must reduce to attain the ozone and PM2.5 NAAQS and to reduce the health risks associated with such pollutants;

The proposed amendments are necessary to provide economic relief to affected fleets while assuring that California continues to meet its air quality obligations and health based goals;

Despite future emissions being lower than originally anticipated, substantial reductions are still needed by 2014 to meet the PM2.5 attainment deadline and by 2023 to meet the 8-hour ozone attainment deadline;

The proposed amended regulation would continue to reduce PM emissions from trucks and buses and meet the goals of the Diesel Risk Reduction Plan by achieving the maximum feasible PM reductions by 2020, and help achieve the state implementation plan (SIP) reduction goals in 2020 for attainment in regions downwind of the South Coast and the San Joaquin Valley air basins;

In accordance with Health and Safety Code section 39667, and based upon the Board's determinations under Health and Safety Code section 39662, the amendments have been designed to achieve the maximum possible reduction in public exposure to toxic air contaminants by 2020;

Even with the major amendments and economic relief proposed, the proposed amended regulation would significantly reduce diesel PM and NOx emissions and associated cancer, premature mortality, and other adverse health effects statewide, such that emission reductions from the proposed amended regulation are expected to prevent 3,500 premature deaths from 2010 to 2025;

In accordance with Health and Safety Code section 43013(a) and (b), the in-use emission standards and other requirements of the proposed amendments are necessary, cost-effective, and technologically feasible for in-use on-road heavy-duty diesel fleets within the time provided for compliance;

The economic impacts of the proposed regulation would reduce the costs of compliance for affected fleets and have been analyzed as required by California law, the conclusions and supporting documentation for this analysis are set forth in the ISOR and the benefits of the regulation to public health and the environment justify the costs of compliance, and enforcement;

The proposed amended regulation exempts 150,000 lighter trucks from having to meet the PM filter requirements reducing the estimated costs of the regulation over both the next five years and the life of the regulation by about 60 percent, and the average costs for businesses outside the transportation sector would be reduced by 70 percent, with nearly all of the costs being eliminated entirely for thousands of small businesses;

The overall cost effectiveness associated with the proposed amended regulation with the updated inventory would be improved to $44 per pound of diesel PM reduced and $1.70 per pound of NOx reduced; and

The proposed amended regulation would reduce the costs to school districts by about 12 percent, or over $8 million, over the life of the regulation.

The reporting requirements of the proposed amended regulation which apply to businesses are necessary for the health, safety, and welfare of the people of the state.

WHEREAS, pursuant to the requirements of the California Environmental Quality Act (CEQA) and the Board's regulations under its certified regulatory program, the Board further finds that:

ARB staff has prepared an environmental analysis for the proposed amendments, which is contained in Chapter VI of the Initial Statement of Reasons (ISOR);

Staff's environmental analysis determined that the proposed amendments would substantially reduce both PM and NOx emissions, as compared to the environmental conditions that currently exist because the in-use emission requirements in the Truck and Bus regulation have not yet become effective and have therefore not yet resulted in actual emission reductions;

Staff's environmental analysis determined that the proposed amendments would substantially reduce both PM and NOx emissions, as compared to the environmental

conditions that currently exist; this is because the future-effective standards in ARB's current Truck and Bus regulation have not yet become effective and have therefore not yet resulted in actual emission reductions;

However, staff's environmental analysis also determined that the emission benefits from the proposed amendments would, in the short term, be less than what would have occurred under the current regulation with no amendments; these foregone emission benefits are quantified in the ISOR;

While the proposed amendments would not result in any adverse environmental impacts compared to the environmental conditions that currently exist, the foregone emission reductions in future years could be viewed as a significant adverse environmental impact;

These potential adverse environmental impacts have been significantly lessened because of the recession and its impact on fleet activity, which has resulted in emissions being lower today than originally anticipated when the current regulation was adopted in 2008; emissions in future years will also be lower than originally anticipated, as demonstrated by the updated emissions inventory;

The ISOR describes the benefits of the proposed amendments, which are designed to address the serious economic recession and its impact on industry and residents of the State;

The Executive Officer is the decision maker for the purposes of title 17, California Code of Regulations, section 60007, and no final decision will be made until comments on the environmental analysis are fully considered and addressed by the decision maker.

WHEREAS, the Board further finds that no alternatives considered or that have otherwise been identified and brought to the attention of the ARB would be more effective carrying out the purpose for which the amendments to the regulation is proposed, or would be as effective and less burdensome to the affected private businesses and public agencies than the proposed amended regulation.

NOW, THEREFORE, BE IT RESOLVED that the Board is directs the Executive Officer to take the following actions:

Make the modified regulatory language as set forth in Attachment B and as directed below, with such other conforming modifications as may be appropriate, available for public comment for a period of 15 days, provided that the Executive Officer shall consider such written comments as may be submitted during this period, shall make such modifications as may be appropriate in light of the comments received, and shall present the regulation to the Board for further consideration if he determines that this is warranted;

Evaluate all comments received during the public comment periods, including comments raising significant environmental issues, and prepare and approve

written responses as required by Government Code section 11346.9, Public Resource Code section 21080.5(d)(2)(D), and title 17, Cal. Code Regs. section 60007;

Determine whether there are feasible alternatives or mitigation measures that could be implemented to reduce or eliminate any potential adverse environmental impacts, while at the same addressing the serious economic recession and its impact on industry and residents of the State;

Make findings as required by Public Resources Code § 21081 if the proposed amendments would result in one or more significant adverse environmental effects;

Take final action to adopt the proposed amendments set forth in Attachment A, with the modifications set forth in Attachment B and as directed below, as well as any additional conforming modifications that may be appropriate, and any modifications that are necessary to ensure that all feasible mitigation measures or feasible alternatives that would substantially reduce any significant adverse environmental impacts have been incorporated into the final action, or return the proposed amendments and findings to the Board for further consideration before taking final action, if he determines that this is warranted.

BE IT FURTHER RESOLVED that that prior to making any determination of final adoption of the amendments considered by the Board, the Executive Officer should modify the proposed amendments and take public comment on the following:

Incorporating into the Off-Road regulation and Truck and Bus regulation a compliance option that would allow on-road and off-road vehicles that have been retrofitted consistent with the requirements of the two regulations to count towards the compliance requirements of either regulation for a specified period of time, so long as the actions taken under this option do not result in the loss of emission benefits in any given year, subject to the following conditions:

If the vehicle that is retrofitted is subject to the Off-Road regulation and is not needed to demonstrate compliance with the BACT or fleet average requirements, the retrofitted vehicle may be used to comply with the Truck and Bus Regulation until such time that it is needed for compliance with the Off-Road regulation.

Similarly, if the vehicle is retrofitted and is not needed to demonstrate compliance with the Truck and Bus regulation, the retrofitted vehicle may be used to comply with the Off-Road regulation until such time that it is needed for compliance with the Truck and Bus Road regulation.

Not exempting school buses with a GVWR of 26,000 pounds or less, other than those manufactured prior to the 1977 model year, from the regulation's PM BACT requirements;

Adding Northern Sonoma County to the list of "NOx Exempt Areas";

Adding lettuce carrier vehicles to the definition of "Specialty Agricultural Vehicle"; and

Broadening the number of vehicles that qualify for delayed phase-in as low-mileage construction trucks and vehicles.

BE IT FURTHER RESOLVED that the Board reaffirms the State's responsibility for meeting its aggregate emission reduction commitment in the 2007 SIP for the San Joaquin Valley and the South Coast Air Basin, which includes responsibility for any emission reduction shortfalls that may impact that commitment as a result of the adoption of the amendments to the On-Road Truck and Bus Regulation and the In-Use Off-Road Diesel-Fueled Fleets Regulation.

BE IT FURTHER RESOLVED that the Board directs the Executive Officer to monitor the State's progress towards meeting its emission reduction commitment and provide an update to the Board in July 2012 that includes the following:

Updated emissions trends including the impact of economic conditions on the on-road and off-road source categories;

Identification of any potential emission reduction shortfall in the expected emission reductions from these source categories;

If any potential shortfall is identified, proposed actions to remedy the shortfall, which may include but are not limited to regulatory or other actions, including more rapid and effective use of incentive grants to generate earlier reductions.

BE IT FURTHER RESOLVED that the Board hereby directs the Executive Officer to work collaboratively with the San Joaquin Valley Air Pollution Control District and the South Coast Air Quality Management District to continue to gather and analyze local and regional on-road and off-road mobile source inventory data, including population, age, turn-over rates, deterioration, and other fleet characteristics; truck and equipment operation characteristics such as hours of operation, vehicle miles traveled, engine load, emission rates, and places of operation; and independent corroborative data such as fuel use with which to cross-check emissions estimates.

BE IT FURTHER RESOLVED that the Board finds that because section 209(a) of the federal CAA does not preempt California from adopting emission standards for non-new on-road motor vehicles, California is not required to request a waiver from the U.S. EPA pursuant to CAA section 209(b).

BE IT FURTHER RESOLVED that the Board finds that the amendments that affect in-use off-road engines are not preempted under section 209(e)(1) in that they do not apply to new off-road engines under 175 hp used in farm and construction vehicles or to new locomotives and locomotive engines.

BE IT FURTHER RESOLVED that the Board hereby determines that the amendments apply to in-use off-road engines will not cause California's off-road engine emission standards, in the aggregate, to be less protective of public health and welfare than applicable federal standards, do not undermine any previous protectiveness finding made by the Board, and are not inconsistent with CAA section 209; accordingly, the Board directs the Executive Officer to request that U.S. EPA confirm that the approved amendments fall within the scope of authorization requests presently pending before that agency.

I hereby certify that the above is a true and correct copy of Resolution 10-44, as adopted by the Air Resources Board.

Mary Alice Morency, Clerk of the Board

FILED

SEP 26 2011

Resources Agency of California

Resolution 10-44

December 17, 2010

Identification of Attachments to the Board Resolution

Attachment A: Proposed amendments to Cal. Code Regs., title 13, section 2025, "Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants from In-Use Heavy-Duty Diesel-Fueled Vehicles (Truck and Bus regulation)" as set forth in Appendix A to the Initial Statement of Reasons, released October 21, 2010.

Attachment B: Staff's Suggested Modifications to the Proposed Amendments to the Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants, from In-Use Heavy-Duty Diesel-Fueled Vehicles.

ATTACHMENT 2

Responses to Comments on Significant Environmental Issues Regarding the Amendments to the Truck and Bus Regulation

RESPONSES TO COMMENTS ON SIGNIFICANT ENVIRONMENTAL ISSUES REGARDING THE AMENDMENTS TO THE TRUCK AND BUS REGULATION

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APPENDIX A

Table A-1 List of Persons and Entities whose Comments are Included in this Summary of Comments on Significant Environmental Issues Regarding the Amendments to the Truck and Bus Regulation A-1

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LIST OF ACRONYMS

AQI	Air Quality Index
ARB	Air Resources Board
BACT	Best Available Control Technology
CEQA	California Environmental Quality Act
CTTA	California Tow Truck Association
DPF	Diesel Particulate Filter
DPM	Diesel Particulate Matter
EPA	Environmental Protection Agency
GVWR	Gross Vehicle Weight Rating
NAAQS	National Ambient Air Quality Standard
NAPSA	North American Power Sweeping Association
NOx	Oxides of Nitrogen
OEHHA	Office of Environmental Health Hazard Assessment
PM	Particulate Matter
PM2.5	Particles up to 2.5 microns in diameter
SIP	State Implementation Plan
TAC	Toxic Air Contaminants
TRAC	Truck Regulations Advisory Committee
U.S. EPA	United States Environmental Protection Agency
VDECS	Verified Diesel Emission Control Strategy

ARB STAFF RESPONSES TO COMMENTS RAISING SIGNIFICANT ENVIRONMENTAL ISSUES REGARDING THE PROPOSED AMENDMENTS TO THE REGULATION FOR IN-USE ON-ROAD DIESEL VEHICLES

SEPTEMBER 19, 2011

I. INTRODUCTION

This document compiles responses to comments raising significant environmental issues regarding the proposed amendments to the Regulation for In-Use On-Road Diesel Vehicles (Truck and Bus regulation). The following comments and responses are copied from the Final Statement of Reasons for the proposed regulation. Each comment is followed by the agency response explaining how the proposed action was changed to accommodate each objection or recommendation, or the reasons for making no change. A reference code in parentheses at the end of each comment identifies the person or entity submitting the comment. These reference codes can be can be matched with the reference codes in the first column of Table A-1 for the identity of the person or entity submitting the comment.

II. SUMMARY OF PUBLIC COMMENTS AND AGENCY RESPONSES

A. Summary of Public Comments Presented Prior to or at the Hearing and Agency Responses

The 45-day comments refer to sections of the regulation that were made available with the October 2010 hearing notice. Some of these sections have since been renumbered and the responses to the comments will refer to the section of the current regulation released with the Notice of Public Availability of Modified Text.

1. Need for Emissions Reductions

a) Ambient Air Quality

1. **Comment:** As a state, it is vitally important that we act prudently when making adjustments to our clean air standards because the health and economic vitality of California depends on it. In the San Joaquin Valley, for example, emission inventory margins to meet our current Clean Air Act commitments are currently at zero. In the South Coast Air Basin, the margin is minimal. If we fail to meet these commitments as mandated by the Clean Air Act, we would not only jeopardize federal funding, but also endanger the health and wellbeing of millions of our residents. (ENG) (LOWEN)

Agency Response: As a result of State Implementation Plan (SIP) implementation efforts at the local and State level, air quality is improving in both the South Coast and San Joaquin Valley regions. These measurable improvements demonstrate that ARB is on track to meet our control strategy commitments.

The South Coast has seen dramatic improvement in PM2.5 air quality, with a 37 percent decrease in the basin-wide annual average design value over the last eight years. This decrease has occurred even with the inclusion of a new high site monitor in Mira Loma (Riverside County) in 2006. Based on data in 2009, sites outside the Riverside area already meet or are close to meeting the annual standard. Preliminary South Coast data for 2010 indicate that concentrations are continuing to decline, with only the Mira Loma site exceeding the annual standard.

PM2.5 air quality in the San Joaquin Valley has also improved, although the progress has not been as uniform across the region. The most significant air quality improvement occurred in the northern and central part of the Valley where monitoring sites meet or are close to meeting the annual standard. Air quality in the southern San Joaquin Valley, which includes the Bakersfield area, has also improved, with annual design values decreasing 10 to 20 percent.

Air quality design values reflect a three-year average which is used for comparison to federal standards. However, evaluating multiple measures of air quality can provide a broader picture of overall air quality progress. For example, individual year annual PM2.5 values for 2009 and 2010 throughout the Valley show significant improvement. In 2010, only two of the twelve sites in the Valley (Corcoran and Bakersfield) recorded annual concentrations that exceed the federal air quality standard. Peak 24-hour PM2.5 concentrations have also declined significantly, dropping over 30 percent since 2001. The Air Quality Index (AQI) is another measure that is used to evaluate daily air quality conditions. Between 2001 and 2010, the number of days considered unhealthy under the AQI has been cut in half.

As the economy recovers, ARB will continue to track emission trends to ensure the 2014 emission targets are met. ARB Resolution 10-44[1] directs the Executive Officer to monitor the state's progress toward meeting its emission reduction commitment and to provide an update to the Board at its July 2012 meeting that includes an updated emissions trend including:

- the impact of economic conditions on the on-road and off-road source categories;
- the identification of any potential emission reduction shortfall in the expected emission reductions from these source categories; and
- proposed actions to remedy any identified shortfalls; these could include but are not limited to regulatory or other actions, such as more rapid and effective use of incentive grants to generate earlier reductions.

2. **Comment:** This comment letter is being provided to you jointly on behalf of the South Coast Air Quality Management District and the San Joaquin Valley Air Pollution Control District. Together, these two air basins comprise most of the geographical nonattainment area in California for health-based federal ozone and

[1] Resolution 10-44 can be found on ARB's website at: http://www.arb.ca.gov/regact/2010/truckbus10/res1044.pdf

PM2.5 standards, and are also home to most of the population impacted by excessive levels of those pollutants. As you know, over 80% of the emissions that contribute to PM2.5 and ozone formation in these air basins are released from the on-road and off-road mobile sources of air pollution that are the subject of a public hearing during the regularly scheduled meeting of your governing board in December. It is impossible for the South Coast and San Joaquin Valley to meet the health-based federal ozone and PM2.5 standards without significant reductions in emissions from the in-use on-road diesel-fueled vehicles and the in-use off-road diesel-fueled fleets. In December, your Board is considering significant relaxations of the existing regulations covering these source categories.

The primary justification for the proposed relaxations is rooted at the adjustments to the current and projected emissions estimates for the affected source categories which show significantly lower emissions compared to the 2007 State Implementation Plan (SIP) for the San Joaquin Valley and the South Coast Air Basin. These adjustments reflect enhancements to the inventory from better quantification methodologies and better accounting for the impact from the economic recession. We have reviewed CARB's work on the new emissions estimates and believe that new inventory estimates reflect major improvements and are reasonable given the available data. We are also aware of the fact that the industry estimates show that the projected emissions may be even lower than the CARB's estimates. We are, however, concerned that the proposed relaxations leave little or no margin for error in relation to the reductions needed to reach attainment of the PM2.5 standards before the federally mandated deadline in 2015.

Our concern arises from the fact that failure to meet the standards in a timely fashion will subject the South Coast and the San Joaquin Valley regions to devastating sanctions under the federal Clean Air Act. Failure to get the necessary reductions from mobile sources under state's jurisdiction will unfairly shift the burden to stationary sources that have been heavily regulated already. Given the current high level of control on stationary sources and that fact that over 80 percent of the emissions come from mobile sources, any shortfalls cannot be rectified with more regulations on stationary sources. (SCAQMD1) (SJV/SC1)

Agency Response: State law[2] assigns ARB the primary responsibility to ensure California's compliance with the federal Clean Air Act. Traditionally, ARB shares that responsibility with local air districts through defined SIP commitments at both the State and local level.

When ARB adopted the 2007 State Strategy as a SIP revision, the State of California made a legal commitment, required by the Clean Air Act and enforceable in federal court, to reduce emissions to the levels necessary for 2014 attainment. ARB specifically identified several ways this emission reduction commitment could be achieved:

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[2] California Health and Safety Code section 39003.

- New measures as described in the SIP;
- Other alternative measures that ARB had not considered at the time the SIP was adopted;
- Incentive programs that support the replacement or retrofit of aging, higher polluting pieces of equipment; and
- Actual emission decreases resulting from changes in economic activity.

ARB continues to fully implement the PM2.5 SIPs, even as the economic recession has resulted in substantial emission reductions for some source categories. As a result of the recession, actual emission decreases from reduced economic activity, most notably in the goods movement sector, moved California closer to the emissions levels needed for attainment in 2014. This has allowed ARB to maintain the State's SIP commitments in the South Coast and San Joaquin Valley while also providing some additional time for affected industries to comply.

In the case of the PM2.5 SIP, there is also an expectation on the part of the State that the federal government provide additional emission reductions based on the U.S. EPA's authority to regulate locomotives and other national sources of air pollution. However, if there is a shortfall in a SIP due to lack of federal action, California will be required to achieve additional emission reductions. For example, the SIP for the South Coast calls for reductions of 10 tons per day of oxides of nitrogen (NOx) from sources U.S. EPA or other federal agencies regulate. The South Coast AQMD has already agreed to a 1 ton backstop in the event federal reductions fail to materialize. ARB would still have the overall obligation that the emissions targets specified in the SIP are met by the required deadline.

As the economy recovers, ARB will continue to track emission trends, as directed by the Board, to ensure the 2014 emission targets are met. See the response to Comment 1 for the directives issued by the Board in ARB Resolution 10-44.

3. **Comment:** We probably set a precedent having a co-signed letter between our Executive Officers asking for consideration of re-assurance that if there are any deficits or shortfalls with the proposed amendments relative to the SIP that they be made up. And we urge you to take our language and put some dates certain in there relative to time line. Because that time frame from 2012, 2014 is very short. We thought that similar to what you have done with the -- like the railroad commitment letter concept that we set a date certain they come back with some actions that could achieve further reductions in 2014. So we urge you to consider some of the recommendations in our resolution language as you move forward.[3] We do appreciate the language that you have provided. And we appreciate all the

[3] The attachment to the comment letter, which sets forth the suggested resolution language, is not reproduced here. The SCAQMD's proposed language is attached to a comment letter submitted during the 45 day comment period and identified as Comment 91 of the comments posted on the comments log for this rulemaking at: http://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=on-offroad10.

hard work staff has put in on the emissions inventory updates and look forward to continuing to work with staff and enhance the inventories. (SCAQMD3)

Agency Response: As the economy recovers, ARB will continue to track emission trends, as directed by the Board, to ensure the 2014 emission targets are met. See the response to Comment 1 for the directives issued by the Board in ARB Resolution 10-44.

Resolution 10-44 also incorporates the additional provisions requested in this comment.

4. **Comment:** Our coalition has actively engaged in the emission inventory update process. We appreciate the responsiveness of staff to new emissions data and the extensive efforts to make the necessary inventory adjustments in a short timeframe. We are concerned however, that the revised emissions inventory is being used in lieu of committed emissions reductions. Therefore, use of the full "margin" created by the newly reduced inventory to allow for slower compliance timeframes in the proposed amendments directly conflicts with the 2007 State Strategy's aggregate tonnage State Implementation Plan commitments for 2014. Reliance on unenforceable inventory changes as "emissions reductions" does not comport with the Clean Air Act, which requires that the reductions necessary to demonstrate that attainment be enforceable. Even if ARB could use unenforceable changes in the inventory to satisfy its SIP commitment, in the event that economic growth is greater than ARB projections, or any other unforeseen vehicle or equipment usage patterns occur, failure to meet the 2014 aggregate tonnage targets would be all but inevitable. Further, current SIP commitments are based on air quality modeling done prior to significant changes in the off-road inventory. New air quality modeling needs to be performed to determine the actual impact of inventory changes, but changes are likely to show that additional reductions will be needed. For example, the 2008 Inventory in the South Coast estimates that off-road equipment accounts for more than twenty percent of total air basin NOx emissions. (BWG1)(BWG2)

Agency Response: In designing the regulatory amendments, staff were very careful in ensuring that the overall SIP commitment would be met. The staff analysis demonstrated that emissions from trucks, buses, and construction equipment were much lower by the end of 2010 than previously anticipated in the SIP. The updated forecasts strongly suggest that emissions would also be lower in 2014. The amended regulation will generate sufficient emissions reductions to meet federal SIP commitments while providing the time necessary for fleets to comply with the regulation.

The most significant change in emissions from trucks, buses, and off-road equipment was the impact of the recession. An emissions accounting that incorporates the impacts of the recession, future emission changes, and the benefits of the new SIP measures is the appropriate approach to assess the adequacy of the PM2.5 SIPs now close to final implementation. This accounting was performed as part of the PM2.5 SIP revision submitted to U.S. EPA in May 2011 for the South Coast and San Joaquin Valley air basins and demonstrates that ARB is on track to meet our control strategy commitments.

As the economy recovers, ARB will continue to track emission trends, as directed by the Board, to ensure the 2014 emission targets are met. See the response to Comment 1 for the directives issued by the Board in ARB Resolution 10-44.

There has been no significant change to the fundamental science and air quality modeling used to set the 2014 emission targets in the South Coast and San Joaquin Valley. The new emissions inventory data primarily impact current emissions and estimates of future emissions as the economy recovers and do not substantially change the total regional emissions in the base years. The recession does not impact the SIP base year modeling since both regions used base years prior to the recession. Small changes in the base year emissions due to methodology improvements would not substantially change the fundamental relationship between emissions and air quality in the base year modeling. Therefore, the air quality modeling and the 2014 emission targets are still sound.

5. **Comment:** We write on behalf of the undersigned organizations [identified in Table 2 of Appendix A of this document] and our hundreds of thousands of California members in support of the regulations, with serious concern over the amendments proposed in October 2010 for the "truck and bus" and "off-road" regulations. We are cognizant of the need to provide some relief to diesel equipment and truck owners during the economic downturn. However, the rule changes as proposed go beyond what is necessary in the short term, and reduce near-term health benefits in the 2014-2017 timeframe. We therefore urge your consideration of the amendments recommended here in order to achieve the following:

    1. Reduce localized impacts and retain the mid- and long-term benefits of the On- and Off-Road rules.
    2. Eliminate loopholes to ensure all equipment is cleaned up by 2023.
    3. Create at least a 20 percent SIP margin for 2014 and beyond due to uncertainty in economic projections, inventory uncertainties, and the absence of updated air quality modeling. (BWG1)(BWG2)

Agency Response: ARB's charge, under state law, in adopting regulations to improve air quality is to consider the need for regulations, their technological feasibility, costs to affected stakeholders and cost-effectiveness. The changes to these rules were made to achieve a better balance between the needed emissions reductions and the ability of fleets to comply. When the regulations for in-use and off-road vehicles were first adopted in 2007 and 2008 respectively, the economy was growing. The recession has reduced fleets' financial ability to make the needed investments to comply.

The mid-term and long-term benefits of the Truck and Bus regulation will be retained. For a discussion of the benefits of the Off-Road regulation, see the rulemaking documents for the Off-Road regulation at: http://www.arb.ca.gov/regact/2010/offroadlsi10/offroadlsi10.htm.

The response to Comment 1 discusses the improvements in air quality that will continue to 2014 and beyond and will reduce public exposures and related adverse health

effects. Updating our emissions inventories for trucks and buses to account for recessionary impacts has shown that PM2.5 emissions from these sectors will be lower in 2012 than would have been achieved through implementation of the truck and bus rule as originally adopted. In 2014, PM2.5 emissions from trucks and buses will be equivalent under the revised SIP to those forecasted in the original SIP. Thus, we remain on track to meet the emission reduction commitments that are needed to reach the annual air quality goal in 2014. Measurable improvements in air quality also demonstrate the benefits of our overall program. This program will continue to reduce emissions into the future, beyond 2014. ARB will revisit implementation progress in 2012 and take action, as necessary, to offset any unforeseen emission increases.

The amendments to the regulation take advantage of the emission reductions produced by the economic downturn, some of which reduce localized impacts in residential areas that abut major roadways and areas prime for near-term development. In general, PM emissions along roadways will decline significantly because 90 percent of heavier trucks will have PM filters by 2014 and nearly all will have PM filters by 2017. In addition, by 2023, all trucks will have 2010 model year emissions equivalent engines except low-use trucks and those operating exclusively in NOx-exempt areas where there is no need for NOx emissions reductions. The NO-exempt trucks will all be equipped with PM filters. Therefore, staff does not believe there are loopholes to be closed. The response to Comment 19 includes a description of changes to the regulation since the Board Hearing to require additional cleanup of older trucks to help mitigate the health impacts in these communities. The Board also acted to mitigate the health impacts in environmental justice communities by maintaining the Phase 2 requirements of the Drayage Truck regulation and adopting amendments to address emissions from dray-off and Class 7 drayage trucks that operate in and around ports and intermodal rail yard facilities.

For more information on the SIP margin, please see the response to Comment 61 for a discussion of the updated emissions inventory and staff's goals for a revised regulation that would continue to generate sufficient emissions reductions to meet federal SIP commitments while providing the regulatory relief necessary to ensure that fleets could comply with the regulation. As the economy recovers, ARB will continue to track emission trends, as directed by the Board, to ensure the 2014 emission targets are met. See the response to Comment 1 for the directives issued by the Board in ARB Resolution 10-44.

6. **Comment:** The Air Quality Sub-Committee of the Fresno-Madera Medical Society would like to comment on the amendments proposed in October 2010 for the "truck and bus" and "off-road" regulations. We have always and continue to be appreciative of ARB board and staff commitment to cleaning up our air. We know that this is no easy task but still you remain committed to protecting the health of Californians.

   The rule changes, which are being proposed, do a great job of identifying areas of relief for truck owners; however, in some areas they seem to go beyond what is necessary in the short term. As physicians we are always concerned with health protections. With the proposed changes, communities in the San Joaquin Valley

living around the State's most important transit corridors will have to suffer longer from the impacts of diesel pollution. Our Valley will also have a ZERO SIP margin making us very susceptible to small changes in the economy. With some of the dirtiest air in the nation, the Valley needs to be on the fast track to meeting SIP requirements not delaying attainment or even failing to meet attainment. We therefore urge your consideration of the amendments recommended here in order to achieve the following:

1. Reduce localized impacts, especially for the San Joaquin Valley, and retain the mid- and long-term benefits of the On- and Off-Road rules.
2. Eliminate loopholes to ensure all off-road equipment is cleaned up by 2023.
3. Create a State Implementation Plan margin for 2014 and beyond, especially for the San Joaquin Valley.
4. Create or make available more incentives for truck drivers to encourage compliance.

In closing, we appreciate the hard work of staff, as well as board members to adjust these important regulations in these changing circumstances while making an effort to maintain health benefits. Your decisions to enforce a balanced yet aggressive plan bring us closer to a better California, a California that embodies good health and a good economy. (EWILL)

Agency Response: Please see the agency response to Comment 5 for responses to the first three points of this comment. Regarding incentives for truck owners, specific changes to ARB funding programs are considered separately from the regulatory process. As described in Chapter VII, Section D of the October 2010 Staff Report: Initial Statement of Reasons for Proposed Rulemaking, funding program changes were planned to occur after Board action and direction on the regulatory changes. In general, the extended compliance deadlines for many trucks enable greater potential funding opportunities by allowing more time for applicants to apply for funding before regulatory compliance dates. ARB Resolution 10-44 also includes Board's directives to modify funding programs to obtain near term health benefits from early emission reductions.

7. **Comment:** The Coalition for Clean Air is a statewide air quality advocacy organization with offices in Los Angeles, Fresno, and Sacramento, and we're committed to ensuring clean air for all Californians. I want to acknowledge the efforts of CARB staff and Board for, over the last few years, continuing to engage with us in dialogue and really spending time with us going over the inventory. I know it's a tough task before you in terms of getting things as best as we can with the latest data. So we do appreciate your efforts there. I also want to acknowledge the work of the [Truck Regulatory Advisory Committee] TRAC and the outreach that ARB has committed itself to do on diesel rules. I think these efforts want to continue to support those and ensure they continue.

   Certainly in terms of the regulation, we appreciate the efforts to address the dray-off issue. That said, I think we have some major concerns with the proposal before us today. While we acknowledge certainly a need for and have consistently

acknowledged with the downturn of the economy there would be a need for some modification to these rules, we are concerned by the level of the modifications both in terms of the fact that we are unfortunately trading off some of the near-term benefits that we would otherwise have experienced, particularly in localized communities, as well as our level of comfort with the SIP margin is just not at a place where we'd like to be. So as the joint coalition letter shared, we would really appreciate having a 20 percent margin there, particularly considering the South Coast emissions inventory analysis showed the potential for 20-to- 30 percent of the emissions being off. So we don't want to get to a place where we're at 2014 and actually short. And though I know that the staff is committed to reviewing this rule, if the economy changes down the line, I'm concerned that's going to be too late to really make any fundamental changes we might need to do to shore up that SIP. That said, in [the joint-coalition] letter, we did include some -- those are the umbrella requests. We included some specific suggestions where staff can explore making these changes, and we really encourage the Board to ask staff directly about some of those changes, but also to ensure to see if they can explore any others that might be able to meet the request we're making today.

[The commenter referred to a "joint coalition letter" submitted by the Better World Group (BWG2) on the day of the Board Hearing. It is identified as Comment 16 in the table titled "Comments posted to on-offroad that were presented during the Hearing" posted on the comments log for this rulemaking at http://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=on-offroad10] (CCAIR1)

Agency Response: See the response to Comment 1. Also, see the responses to Comments 4, 5, 20 and 79 for our responses to the joint coalition letter.

8. **Comment:** CAPCOA supports ARB's efforts to reduce public exposure to these air pollutants, and also recognizes the importance of basing control requirements on accurate emissions inventories and addressing the economic impacts on the regulated community. CAPCOA supports ARB's efforts to ensure that the underlying scientific, technical, and economic data for the rulemaking include the best available information.

We have several concerns that we request ARB consider as part of undertaking these rulemakings. CAPCOA members rely on the emission reductions from ARB's mobile source program as part of the State Implementation Plan (SIP) for attainment of the National Ambient Air Quality Standards (NAAQS), and several air districts are facing near-term attainment deadlines. Since mobile source emission inventories are vital to air quality improvement planning efforts throughout California, CAPCOA would like to see a firm commitment of resources by ARB to improve the mobile source emission inventories on both a regional and statewide basis. It is also critically important that ARB clearly identify shortfalls in the SIP, and alternative emission reduction strategies to cover any shortfalls. Further, ARB should take responsibility for addressing any concerns raised by USEPA (EPA) regarding the impact of these rulemaking efforts on the SIP and

associated attainment demonstrations. We also request that affected districts be included in discussions with EPA regarding impacts on their SIPs. (CAPCOA)

Agency Response: ARB continues to commit significant resources to the improvement of mobile source emission inventories at the county, air district, air basin, and statewide levels. Also, ARB will address concerns raised by U.S. EPA regarding the impacts of these rule amendments and include affected districts in discussions with EPA regarding the impacts of these rule amendments.

b) State Implementation Plan Commitments

9. **Comment:** I want to thank the Board for advancing clean air and public health through cleaning up diesel equipment. I understand that taking reasonable efforts to relax the rule due to fewer emissions and slower economy is what the Board is prepared to do. But due to the absence of updated air quality monitoring and modeling and specific reasons for uncertainty, these proposed amendments risk missing the mark and falling short on SIP requirements and public health goals to prevent cancer, asthma, and other health effects due to diesel pollution. That SIP requirements and public health goals to -- some of the reasons for uncertainty, some of the specific reasons for uncertainty are, number one, the credit provisions for early PM retrofits. I think that those are good provisions that can help encourage early compliance and early health reductions. But there's some uncertainly in how they're going to progress. The trend in the economy indicating that truck miles could outpace expectations in the economy, that's an uncertainty. And the methodology changes to off-road equipment. While this adjustment to the inventory is reasonable, this does not mean there's a linear relationship with SIP requirements. This is because the 2007 SIP commitment were projected assuming 15 percent more tons of emissions than were actually occurring. So there is a lot of uncertainty in the modeling, and I do hope that ARB will follow through and make sure when the SIP occurs in April 2011 that there will be an adequate margin or contingency measures. I encourage the Board to have a 20 percent margin to make sure that there will not be falling short of the SIP commitments and there will be a compliance with the Clean Air Act. Thank you. (BCA)

Agency Response: See the responses to Comments 2 and 4.

10. **Comment:** We want to thank you for making the difficult decision a couple years ago to adopt these rules knowing the economic uncertainty ahead. So we want to thank you for adopting these rules, but also for showing reasonable flexibility to modify the rules given on their changing on-the-ground conditions. We want to remind people that what was true when these rules were adopted is still true today. Many of our asthma coalitions still deal with the effects of diesel pollution every day. They see kids forced indoors for recess, kids missing school, and parents missing work because of asthma attacks. And we see families spending money on preventable health care costs. These rules still represent the best opportunity for California to improve some of the dirtiest air in the country. We know diesel trucks and buses are the single largest source of diesel pollution in

the state and account for some 40 percent of the diesel soot. Curbing these emissions is vital to meeting federal air quality standards and removing the health and economic burdens to many families. So RAMP and the COFA coalitions urge you to continue to protect the people's health by making key changes to the proposed amendments. They were outlined in the [joint coalition] letter submitted by Camille Kustin from public health, environmental, and communities groups. Those changes would provide near-term relief to impacted communities, eliminate loopholes, and create a margin of error for the SIP. (RAMP)

Agency Response: See the response. to Comment 2. Also, please see the responses to Comments 4, 5, 20 and 79 for our response to the joint coalition letter.

11. **Comment:** We are particularly concerned about how these amendments to both diesel rules will affect our home in the short and long term, as these sources represent a considerable amount of PM and NOx emissions. Even though we are, of course, sensitive to the economic situation and the current times that we are living in, of course, the localized impacts will continue. These especially affect low-income communities of color a lot, which are located in the San Joaquin Valley. These people will have little or no access to health care. And they will not be getting relief in their health or their health care bill. People don't feel the difference in the changes in modeling or inventory. They feel the changes in how they breathe and how well they can breathe. These rules play a significant role also in our SIP attainment. The economy, of course, is a very difficult thing to predict, and I know staff has spent tireless hours working on that. However, in terms of health, a slightly faster economic recovery would put us out of SIP compliance. And since we have no margin of error, as other people have mentioned, this is a serious concern. Some specific steps are mentioned in a comment letter [joint coalition letter] that we signed onto, but in sum, we respectfully ask some changes be made to these amendments to minimize the localized impacts and give us at least a 20 percent SIP margin. Thank you very much for your time. (CCAIR2)

Agency Response: See the responses to Comments 1, 2 and 6. Also, please see the responses to Comments 4, 5, 20 and 79 for our response to the joint coalition letter.

12. **Comment:** We commend ARB's efforts to reduce emissions from these in-use diesel fleets and believe that the implementation of these rules is a critical step towards achieving clean air and improving public health. As you know, California has submitted several State Implementation Plans, or SIPS, to EPA that rely heavily on reductions from these rules in order to reach attainment of the federal PM2.5 and ozone standards. We are currently discussing with ARB staff the scope of the SIP provisions that will be necessary for the South Coast and San Joaquin Valley SIPS due to the new emission estimates that form the basis for many of the changes to the rules being considered today. We plan to work with your staff on these SIPS in the next few months as we intend to finalize our action on the PM2.5 SIPS by September 2011 and the ozone SIPS by December 30th, 2011, to meet our consent decree deadlines. If the rules are adopted today, we request that you

expedite their submittal to EPA so that we may have sufficient time to take action on them. (USEPA)

Agency Response: ARB will submit these amended rules to U.S. EPA as expeditiously as practicable, consistent with the administrative procedures rules governing the ARB regulatory process.

13. **Comment:** In 2003, this Board adopted a resolution that committed itself to adopting significant mobile source reductions, including diesel reductions, in order to meet the one-hour ozone standard. The deadline for which was just over a month ago, November 15th of 2010. The South Coast air basin and the San Joaquin Valley have failed miserably to meet that one-hour ozone standard. The primary reason they failed to meet that one-hour ozone standard is because this Board, this agency, did not deliver on the reductions that it adopted and committed to in the 2003 resolution. Failure to meet that one-hour standard triggered Section 185 of the Clean Air Act, which imposed a fee -- $10,000 per ton fee on stationary sources. The Clean Air Act says it goes to stationary sources. Stationary sources are paying a penalty in the South Coast air basin and in the San Joaquin Valley primarily as a result of the Board not adopting the mobile source reductions as promised in 2003. Ironically, the San Joaquin Valley Air District, instead of charging the fee to the stationary sources, will charge passenger vehicle owners through their DMV registrations, as if they had anything to do with the not adopted rules. So my point is do not adopt these amendments. The San Joaquin Valley and the South Coast need these reductions, which you're going to backslide to meet the one-hour standard. You still have to meet the one-hour standard. We've been talking about the PM2.5 standard and the eight-hour ozone standard. You still need to meet the one-hour standard. (CRPE)

Agency Response: This comment is not pertinent to the Board action addressed in this rulemaking, which is to approve amendments to the Truck and Bus regulation to reduce NOx- and PM2.5-related emissions and attain the PM2.5 air quality standard in 2014 and the 8-hour ozone standard in 2023. These amendments will not affect the dates by which we meet the former 1-hour ozone standard in the San Joaquin or South Coast Air Basins.

14. **Comment:** We do understand that emissions inventory estimates are always a work in progress that can be enhanced over time. This is particularly true for complex sources categories such as the ones in question here. Another added variable here is the assumptions regarding the pace and timing of the economic recovery which is very difficult to forecast. Given that the proposed amendments rely heavily on CARB's new emissions estimates leaving no margin for error in the San Joaquin Valley and a small margin for error in the South Coast Air Basin, we urge your Board to consider the following in adopting the proposed relaxations to the existing regulations:

    - Reaffirm CARB's commitment that mitigating any shortfall in emission reductions will be the responsibility of CARB from sources under the state's jurisdiction.

- Accept a commitment by CARB to regularly monitor and report on the actual emissions and related trends for the affected source categories, and take timely regulatory action to remedy shortfalls, if any;
- Partner with the South Coast AQMD and the San Joaquin Valley APCD to do additional work to improve the statewide and regional emissions inventory estimates for the affected source categories (which includes collection of additional in-use information such as load factor and activity data); and
- Take actions to facilitate more rapid and effective use of incentive grants in generating earlier reductions from the affected source categories to minimize potential shortfalls such as a SOON type program or the San Joaquin's FAST (Fleet Accelerated Surplus Turnover) program for on-road diesel trucks funded by the state.

We have prepared draft resolution language containing commitments with date certain for actions by CARB to implement the above recommendations and the language is attached for your consideration. We urge your Board to add the attached language to the adopting resolution for the proposed amendment. (SCAQMD1) (SJV/SC1)

Agency Response: ARB Resolution 10-44 incorporates the additional provisions requested in this comment.

15. **Comment:** There is a zero margin of error for the San Joaquin Valley for our State Implementation Plans, and I wonder whether in those calculations there was consideration for the fact that when this rule was originally passed, there was a special exception given to short haul agricultural trucks, which are going to be disproportionately in our region. Again, minimizing the margin of error we have has already been zero. Delays ultimately mean prolonging public health impacts, and there are so many variables attached to this rule, including the economy and the inventory. The bottom line for us in the San Joaquin Valley is we need all of the reductions that we can get from wherever we can get them. The original rule saves more lives and money than it's ultimately going to cost industry. Research from U.S. EPA shows for a dollar in pollution cleanup targeted at diesel pollution, there's $13 in health savings. So today I'm here to urge you to stay the course on the on-road rule. (CVAQC)

Agency Response: Trucks serving the agricultural sector were characterized and included in the update of the emissions inventory. In addition to developing population and age distribution data and accrual rates, staff also collected information regarding where the trucks had traveled. The updated data were used in the calculation of the emissions benefits of the compliance requirements for agricultural vehicles that were included in the SIP margin estimate. Emissions with the amended regulation will remain about the same for the life of the regulation. See the response to Comment 1 for a summary of the Board's directive to monitor the progress of the economy and the projected emissions reductions from the regulation. See also the response to Comment 5.

16. **Comment:** Regarding the SIP, the current proposal leaves the San Joaquin Valley little or no margin for error to reach the federally mandated standards before 2015. We're keenly aware of the economic crisis in the Central Valley. Hundreds of families come to Catholic Charities every single week, and the number is growing. But bad air quality is also costly, financially and health wise. There were two headlines in this morning's paper that illustrate this point. The first, "Asthma Hits State's Poorest the Hardest. Asthma is on the rise in California, and low-income tend to bear the greatest burdens from the condition." And that is from the UCLA Center for Health Policy. Then in the L.A. Times this morning, "Proximity to Freeways increases autism risks, study finds." On top of this, as you know, people are struggling to pay health insurance. Every day at Catholic Charities, we have many children and their families who come in to sign up for the Children's Health Initiative and Healthy Families. They are struggling. The last headline from today's Sacramento Bee, "Study finds 6.8 million Californians without health insurance. As the recession continues to grip the state, the number of Californians without health insurance, especially coverage provided by employers, has continued to decline." Diesel pollution is costly. So I'd ask that you please pass a strong diesel rule with a greater SIP margin. (CCDS)

Agency Response: See the responses to Comments 1 and 5.

17. **Comment:** We would like to express our appreciation for how you have helped to make the rule a little bit more feasible for truckers. We know that's not an easy task, especially in light of these hard economic times. We feel the rule is very important, especially as it related to the San Joaquin Valley. We have an incredible health burden as you very well know. And we are especially concerned with the zero margin that the San Joaquin Valley will face. So we just ask that you continue to look at that and maybe revisit it or talk about it a little bit more and figure out if there is some way to ensure that there will be come safeguards for us. (FMMS)

Agency Response: See the response to Comment 1

2. **Health Effects**

a) Public Health Impacts

18. **Comment:** I want to commend the ARB on its willingness to revisit the requirements of these regulations based on updated inventory information and the present economic downturn. The Air District believes that this represents an equitable approach to regulation and demonstrates ARB's willingness to consider flexible solutions to achieving emissions reductions goals. The Air District continues to be proud to be a partner with the ARB in delivering the emissions reductions necessary to protect public health, global climate and the environment. This partnership is exemplified by our recent successful efforts to decrease health risk from toxic diesel particulate matter (DPM) emitted by drayage trucks in the West Oakland community. It is in the spirit of that partnership, that the Air District

offers the following analysis and recommendations regarding the proposed regulatory amendments.

The Air District is concerned about the proposed regulatory amendments based on the fact that the primary driver of health risk in Bay Area communities is DPM from on-road trucks. This fact is borne out by studies such as our joint health risk assessment (HRA) performed in West Oakland in December 2008. That HRA identified West Oakland as having a cancer health risk of three times greater any other location in the Bay Area and one of the highest in the State of California (1,500 in I million). It also identifies on-road truck DPM emissions as being the cause of 70% of that health risk.

This impact is confirmed by the Air District's Community Air Risk Evaluation (CARE) Program which has identified DPM primarily from on-road trucks and secondarily from off-road construction equipment as being the main drivers of health risk in five additional communities (see Attachment I)[4] in the Bay Area. This evaluation utilized mobile source emissions inventories prepared by the ARB.

Based on ARB's new inventory numbers for off-road equipment emissions it appears there will be some reduction of that source's relative impacts on these communities. However, the new inventory also reveals a significant increase in the emissions from on-road sources and particularly their contribution to overall DPM. The Air District therefore believes that the health risk in its six most highly impacted communities and along Bay Area highways remains at the same or increased levels. (BAAQMD1) (BAAQMD2)

Agency Response: In general, PM emissions along roadways will decline significantly because of the recession and the impacts of the amended regulation. By 2014, 90 percent of heavier trucks will have PM filters and nearly all will by 2017. This will substantially reduce exposure along roadways. In addition, most drayage trucks are already equipped with PM filters and will have 2007 or better engines by 2014. As such, residents of these areas will reap considerable health benefits from the emission reductions that will be accrued due to the amended regulation.

19. **Comment**: I'm here today in very strong support of the diesel regulations that this agency has passed. We are deeply appreciative of all the efforts this agency has made to reduce toxic diesel emission over the years. And no doubt, tens of thousands of lives have been saved. We are concerned, however, with the latest proposal that sort of weakens the health protections of these diesel regulations. Before I comment further, I just want to thank staff for all of their hard work on these regulations. I know it's been a tough slug. We're very appreciative in particular for the effort in working with communities to address the dray-off problems that were undermining the port drayage truck regulation. So thank you

[4] The attachment is not reproduced here. It is a map titled "Bay Area Highly Impacted Communities." that was submitted during the 45 day comment period as part of a comment letter identified as Comment 71 of the comments posted on the comments log for this rulemaking at http://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=on-offroad10.

for those fixes. While we understand that there is a strong need for economic relief and nearly everyone has been impacted by this recession, including my own family, at the same time, so many communities continue to suffer from truck pollution. And it really remains high, despite reduced activity of the recession. The current proposal will significantly delay diesel cleanup over the next few years.

We took a look at what the difference in health benefits would be considering the existing regulations as they are on the books versus the new proposal under consideration today.[5] We used the latest U.S. EPA and CARB methods, and we accounted for the recession and the emissions inventory updates. And we found that there is actually a significant loss in health benefits, about 50 percent for the year 2014. So in the near term, we're looking at some pretty big differences, pretty large gap in health benefits. And on off-road, we see even bigger differences, a 90 percent loss of health benefits in 2014. And still, in 2017, we have a gap in health benefits. We're very concerned about these near-term losses in health protections. So we decided to take a look at who is most impacted. And the answer is obvious. I think you're all aware that families living near high-traffic roadways are the most impacted by diesel pollution. And we've heard a lot of very compelling testimony today. I thought the stories from the students were very compelling. And these maps that we put together just put the demographic data together to show what the disparities look like. They show a very striking disparity that supports the fact that the poorest, the lowest income communities, and those that are more likely to be minority are also the most like fully to live in the highest traffic areas. And that's true on average throughout the state. That's true even more so in southern California, and that's true in these three areas where we did some mapping. That was Commerce. This is Richmond, California, where a lot of the students came from. You can see a very striking disparity when it comes to who's living closest to the freeways. They are more likely to be minority and low income. And of those living near freeways, we found that there are a lot of children; 50,000 in southeast Los Angeles; 10,000 in this area right here, Richmond area. And in Fresno, the disparity persists as well. So we wanted to bring these disparities to your attention, and we're asking you to consider some amendments that would offer some relief to these impacted communities and move up some of the cleanup for the very oldest trucks that tend to operate in these communities the most. I thank you for your consideration. I thank staff for their hard work. (NRDC1) (NRDC2)

Agency Response: The recession has already resulted in lower emissions than anticipated when the on-road and off-road regulations were initially approved by the Board. Our estimates show that the combined statewide impact of the recession with the amendments to the Truck and Bus and Off-Road regulations will provide essentially the same cumulative reductions in emissions levels between 2011 and 2023 as was expected when originally approved before the recession. The health benefits for the

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[5] The commenter is summarizing a presentation that was submitted during the 45-day comment period. It is identified as Comment 13 of the comments presented during the December 17, 2010 Board Hearing and posted to the comments log for this rulemaking at http://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=on-offroad10

years 2014 and 2017 from the rule alone are less than the predicted benefits under the previously adopted on-road and off-road diesel rules; however, when the effects of the recession are added to the amended rule from 2010 to 2025, the estimated health benefits are similar to the originally adopted rule.

If the effects of the recession are excluded, the health benefits over the course of the amended regulations, will still be substantial: approximately 3,900 premature deaths avoided as a result of full implementation of the amended on-road and off-road regulations from 2010 to 2025. Changes in ARB and U.S. EPA methodology in obtaining health impact estimates, as well as effects of the recession, also led to downward revision of the original estimates of premature deaths associated with the previously adopted regulations.

The Board also acted to mitigate the health impacts in environmental justice communities, near busy ports and rail yards by maintaining the Phase 2 requirements of the Drayage Truck regulation and adopting amendments to address emissions from dray-off and Class 7 drayage trucks that operate in and around ports and intermodal rail yard facilities. The Board also acted to mitigate health impacts along roadways for the amended Truck and Bus regulation by adjusting the model year compliance schedule for heavier trucks. Since the Board hearing, the engine model year schedule of the Truck and Bus regulation has been modified to require heavier trucks with 1996 and 1997 model year engines to be retrofit by January 1, 2012. The modifications, which were made available for comment with the May 19, 2011 Notice of Availability of Modified Text, will provide additional PM emissions reductions between 2012 and 2017. In general, PM emissions along roadways will decline significantly because 90 percent of heavier trucks will have PM filters by 2014 and nearly all will have PM filters by 2017. In addition, by 2023, all trucks will have 2010 model year emissions equivalent engines. As such, residents of these areas will reap considerable health benefits from the emission reductions that will be accrued due to the amended regulation.

20. **Comment**: While the ARB analysis indicates that overall emission reductions from the rules with proposed changes combined with the economic downturn are similar to the original rules, the health impacts are most certainly not. Communities most impacted by diesel pollution from trucks will have to wait as many as seven years longer to see the types of emission reductions that were originally approved by the ARB. We are especially concerned that toxic hotspots of diesel pollution throughout the state will receive little relief in the short term. Compared to the existing regulations, for example, emissions of diesel soot under the new proposal would be fifty percent higher in 2014.

    Many areas that are most impacted by truck pollution are the very environmental justice communities that we seek to protect, as they are already overburdened by pollution. Hundreds of thousands of Californians live within one quarter mile of a major freeway carrying diesel trucks; most of these communities are comprised of a much higher percentage of minorities and a greater percent of families that fall below the federal Department of Housing and Urban Development designation for Very Low Income. For example, in Richmond, families living near freeways are more than 70 percent more likely to be non-white and almost 50 percent more

likely to be very low income compared to the average in Contra Costa County. Thus, it is of paramount importance to offer these areas immediate relief from the severe pollution levels that they experience. Please see the attached maps at the end of this letter.

In fact, after accounting for the adjustments to the emissions inventory due to the recession and other factors, the loss of near term health benefits from new proposals translate to roughly 380 fewer lives saved in 2014. That means that compared to the existing regulation, the new proposals would result in a loss of health benefits in 2014 of more than 50% for trucks and 90% from off-road equipment. The loss of health benefits is also significant in 2017. (BWG1)

Agency Response: See response to Comment 19.

21. **Comment**: The proposal for modifications to On-Road Diesel are of concern, increasing the number of trucks exempted from PM filter retrofits from less than 10,000 to over 140,000. This potentially equates to over 240,000 non-filtered engines being allowed to pollute our skies with cancer-causing pollution. (ENG) (LOWEN)

Agency Response: The recession has already resulted in lower emissions than anticipated when the on-road and off-road regulations were initially approved by the Board. Our estimates show that the combined statewide impact of the recession with the amendments to the Truck and Bus and Off-Road regulations will provide essentially the same cumulative remaining emissions levels between 2011 and 2023 as was expected when originally approved before the recession. When the effects of the recession are included from 2010 to 2025, the estimated health benefits are similar to the originally adopted rule.

Nearly all of the vehicles that would not have PM filters after 2015 would be lighter trucks. These trucks represent a smaller portion of the emissions inventory in comparison to heavier trucks, because lighter vehicles generally are replaced in shorter cycles, they operate fairly low miles, and have smaller engines. Many of the lighter trucks will already have PM filters as original equipment. The additional near term emissions reductions achieved by requiring PM filters on the light trucks prior to 2015 are small – about 2 percent of the total benefit achieved for all trucks with the regulation as amended. Lighter trucks also don't tend to be concentrated in localized areas such as distribution centers and don't pose as much of a local PM exposure risk as heavier vehicles. Further, the amended regulation requires the replacement of all light trucks starting in 2015, ultimately providing the maximum PM benefits.

22. **Comment**: While we understand that CARB's proposed revisions are designed to address the downturn in the economy and inventory changes, we believe CARB must still move forward as quickly as possible to protect communities and ensure a transition to cleaner vehicles and equipment. A large body of scientific literature has clearly established the link between diesel pollution and premature death and illness. Diesel pollution sickens and kills thousands of residents annually in California, and disproportionately impacts our poorest and most vulnerable

individuals including seniors, people with heart or lung disease, children and infants. The state's sensible rules to reduce toxic soot pollution over time will protect lives and save California far more than it will cost. Pollution from diesel buses and trucks comprises the largest source of cancer-causing emissions in California, making them the top air pollution-related cancer risk for state residents. In addition to aggravating a variety of respiratory and cardiovascular illnesses and contributing to thousands of hospitalizations each year, exposure to the toxic air contaminants contained in diesel exhaust has also been linked to developmental harm to fetuses, decreased lung growth and development in children, and other serious health and reproductive problems. Diesel truck drivers are especially at risk, and are 1.5 to 2 times more likely to develop lung cancer, as compared to workers not exposed to diesel exhaust. Strong state regulations to control harmful emissions from trucks and buses are critical to saving lives and improving health. But more importantly, regulations on diesel emissions are critical to address health inequities in low income communities and communities of color who pay the highest price in terms of increased risk of death and illness caused by proximity to busy roads and freeways. We support the strongest possible California Air Resources Board's regulations to cut diesel pollution, protect vulnerable and impacted communities, and protect public health from the illnesses and deaths caused by diesel exposure. (HNCA)

Agency Response: Comment noted.

23. **Comment**: I'm here to present this letter on behalf of the undersigned 23 environmental, public health, and community groups.[6] These groups representing all parts of the state and hundreds of thousands of members support the diesel cleanup but have serious concerns -- health concerns regarding the proposed amendments to the on- and off-road rules. There will be other people after me to speak on the specifics. I just want to present the letter. (BWG3)

24. **Comment:** Our organizations have enthusiastically supported the slate of diesel clean up regulations adopted by CARB over the past decade. While it may be particularly difficult to enforce compliance with air quality regulations in the current recession, it is never a good time to be exposed to diesel pollution either. Every day, three times as many Californians die prematurely from the effects of particulate air pollution than in traffic accidents. Diesel pollution not only contains toxic particulates, but contains smog- forming nitrogen oxides and more than 40 other toxic chemicals. Hundreds of peer-reviewed studies from around the world have documented the health hazards of long-term exposure to diesel exhaust, particulate pollution and smog, including asthma and heart attacks, stunted lung growth in children, birth defects, more emergency room visits and higher death rates. At greatest risk are children, the elderly, people with asthma or other lung

[6] The signers are identified in a comment letter submitted by the Better World Group (BWG). It is identified as Comment 16 in the table titled "Comments posted to on-offroad10 that were presented during the Hearing" and posted on the comments log for this rulemaking at http://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=on-offroad10.

illnesses, and those who live in congested industrial areas including near ports or rail yards. (BWG1)

Agency Response: We agree that exposure to diesel PM presents a health hazard to California communities. The specific comments in the letter submitted by BWG3 and BWG1 (also referred to as the joint coalition letter by various commenters) are addressed in the responses to Comments 4, 5, 19, 20 and 79.

25. **Comment:** I know these rules have been very difficult for a lot of people here and that we all sympathize both with people who are hurt by the recession and also people who are hurt by illnesses caused by air pollution. And I know that you as Board members are trying to strike a balance here, and it's not an easy thing to do. I think it's also essential that you operate with the best possible data that is up to date while taking into account the effects of the recession and also correcting the errors that have been made in the inventory. So clearly there does need to be a course correction. In doing that, we think it's important to also remember that diesel soot is not distributed evenly, as you've heard from the students. And the health impacts are also not distributed evenly. So we suggest some amendments that we think would particularly help to reduce some of the localized impacts as you've heard. (SCC)

Agency Response: Please see the response to Comment 18. Also, for the agency response to the amendments proposed by the commenter (SCC), see the response to Comment 80.

26. **Comment**: We have a public health crisis in the San Joaquin Valley due to our chronic air pollution problem, which includes more than $6 million in public health costs and 2400 premature deaths in our region alone due to air pollution. We're particularly concerned about the delays for the on-road rule. Many of our environmental justice communities are living near roadways. These communities are already impacted by pollution, and a delay means more continued pollution in those areas and more health impacts. (CVAQC)

Agency Response: The figure of 2,400 premature deaths in the San Joaquin Valley Air Basin was presented in the December 2009 ARB Staff Report (http://www.arb.ca.gov/research/health/pm-mort/pm-mort_final.pdf, page 39, Table 4a). Due to revisions in methodology for calculating estimates of premature death (by the U.S. EPA and ARB), the estimated number of premature deaths for the San Joaquin Valley air basin was updated in August 2010 to 1,500 premature deaths due to cardiopulmonary causes. We agree with the concern for communities living near roadways. Please see the agency response to Comment 19 regarding the impact on environmental justice communities.

27. **Comment:** The American Lung Association and other health organizations have strongly supported the diesel on-road and off-road regulations because they are life saving regulations and they reduce asthma attacks, reduce respiratory and cardiac illnesses, and hospitalizations, and are very important from our public health perspective. We understand that the ARB needs to provide some additional

flexibility in those regulations due to the economy and inventory changes. And we are asking that we do everything possible to maximize the public health protections and maintain the strongest possible regulations. And we have recommended some strengthening amendments to the staff proposal to increase the retrofits and upgrades in the early years and to increase the SIP margin, especially in the San Joaquin Valley.

The American Lung Association is, of course, particularly concerned about the most vulnerable and disadvantaged communities and urge you to pay special attention to pollution reduction in impacted areas and to consider measures to strengthen requirements in areas near warehouses, truck distribution centers, rail yards, ports, heavy traffic corridors. And finally, just a couple points. We believe it's extremely important to continue to monitor emission levels that are consistent with production we are looking at today to make sure we are reaching the emissions levels that we're expecting and achieving all benefits we're expecting today and to also monitor the pace of the economy. And we can all agree in closing that it will be important to do everything possible to use incentive funds to get early reductions in health impacted communities so we can all work together on that as we move forward. (ALAC1)

28. **Comment:** We continue to urge you to focus on the important overarching goal of health protection, especially making sure that we achieve both near-term and long-term goals to protect public health. And so along those lines, we would urge you, number one, to be cautious as you move forward and to avoid moving up the entire margin of emissions reductions that are estimated in the target update. And number two, we would urge you to look very carefully at the impacts of the regulatory changes on public health benefits, especially in the near term and make sure that in addition to achieve our SIP commitments we avoid giving up public health benefits, especially in vulnerable communities. And we hope you will look at ways that we can achieve all the near-term health benefits through both regulatory and incentive approaches to make sure that we are moving forward with our public health goals. (ALAC2)

29. **Comment:** I'm speaking today on behalf of myself, family, and friends in the San Joaquin Valley and those living near the transportation corridor areas - between 580 and 880 and 238 in the East Bay. My concern with the rule proposed today is that it does not safeguard with enough margin of certainty those most affected by PM and NOx pollution, especially those in the San Joaquin Valley and in the corridors of highway 101, I-5, 99, 880. I'm here today to urge the Board to include an early 2012 emission review to see if the tons of pollution reduced are on target and build in the 20 percent 2014 SIP margin on the emission reductions. Although I've moved to the East Bay where supposedly it's cleaner, my lungs of 30 years living in Fresno are damaged. But for my five nephews, it's not too late. They're relying on you and the staff to get it right. (LFS)

Agency Response: Residents of disadvantaged areas will reap considerable health benefits from the emission reductions that will accrue due to the regulation. Please see the response to Comment 19 for an account of these health benefits. The response to

Comment 19 also discusses changes to the Truck and Bus regulation and to the Drayage truck regulation since the Board Hearing that would help to mitigate health impacts in environmental justice communities.

As the economy recovers, ARB will continue to track emission trends, as directed by the Board, to ensure the 2014 emission targets are met. See the response to Comment 1 for the directives issued by the Board in ARB Resolution 10-44. .

Regarding incentives for truck owners, specific changes to ARB funding programs are considered separately from the regulatory process. As described in Chapter VII, Section D of the October 2010 Staff Report: Initial Statement of Reasons for Proposed Rulemaking, funding program changes were planned to occur after Board action and direction on the regulatory changes. In general, the extended compliance deadlines for many trucks enable greater potential funding opportunities by allowing more time for applicants to apply for funding before regulatory compliance dates. ARB Resolution 10-44 also includes Board's directives to modify funding programs to obtain near term health benefits from early emission reductions.

30. **Comment**: I am concerned that the proposed modifications do not maintain the short and long-term health benefits of the original rule. They also go too far and can impact the public's health adversely. The health of businesses should not become a priority when the public's health can suffer. (HCHUN)

Agency Response: Please see agency response to Comment 19.

31. **Comment**: We are an environmental health and justice organization in the city of Commerce where our communities are heavily impacted by activity from the goods movement industry. There is a real impact in our communities because the place where they live and work is a diesel hot spot. With two major freeways, one of which is the I-710 super highway, a major arterial road, and four rail yards, they are suffering from asthma, cancer and other respiratory illnesses due to the cumulative impacts from all of these sources, of which some are mobile smoke stacks just driving by constantly through our community. It is really unfortunate that instead of children carrying backpacks full of toys, they are carrying backpacks with respiratory machines. And there are children whose backyard is rail yards or their backyard is the freeway or other highways where their quality of air is heavily impacted. We do appreciate the fact that the staff and the Board are working towards improving the quality of air, but we do recognize that the economy is not ideal right now. Not for some of the industry and not for our community. And these rules are important because they will cut down on costs, medications, and also health risk for the families that are heavily impacted. The human cost is heavy, and the proposed changes go beyond what is necessary. And the near-term health risks in 2014 and 2017 would be cut short. Our impacted communities need near-term relief now. We ask that staff provide near-term benefits through upgrades on the oldest dirtiest trucks beginning in 2014. So we would ask that the staff provide near-term benefits starting in 2012 from the dirtiest trucks, including a higher SIP margin and also a monitoring program. And thank you for the drayage rules that you are working on. (EYARD2)

Agency Response: The amendments to the regulation take into consideration the emission reductions resulting from the recession, some of which reduce localized impacts. These amendments were made carefully to reduce costs to the regulated community while maintaining the emissions reductions needed to protect public health. We believe the amendments achieves that balance. Please see agency response to Comments 19 regarding the impact on environmental justice communities and the changes to the Truck and Bus regulation and the Drayage Truck regulation since the Board Hearing. Also, see the response to Comment 1 for the Board's directive to staff to monitor the State's progress toward meeting its emission reduction commitment and provide an update to the Board at its July 2012 meeting.

32. **Comment**: I live in the Richmond community two blocks from one truck route and two blocks from another truck route. I stand here today because I'm concerned in how diesel exhaust is becoming a harm to the children's health. The children who are exposed to diesel exhaust have a higher risk of having asthma because their defenses are not fully developed. As you all probably know, Richmond's asthma hospitalization rate is three times the state average. I, myself, suffered from asthma as a child. I once had to go to the emergency room because I was having trouble breathing. My seven-year-old sister has asthma now. She sometimes has to use a machine that helps her take the medicine she needs. This medicine helps her by opening the pores to her lungs. I have two cousins who also live in Richmond and also suffer from asthma. In your mission, you mention that you want to promote and protect the public health. And all of us who are suffering this diesel impact want to see you do as you say. (RHS1)

33. **Comment**: I'm currently attending Richmond High School and I'm a junior in the Health Academy. First of all, I would like to show you the map of where our school is. All the highlighted parts are the truck routes. As you can see, there's, a lot of them around our school. The reason I'm here today is because I wanted to talk to you about diesel exhaust and how it is affecting everyone around us. As you know, diesel exhaust is a problem because it contains more than 40 toxic air contaminants. Diesel is widely used throughout our society. It is used to power bus, agricultural equipment, back-up generators and, of course, trucks. Imagine trucks passing by your house every day leaving particles and gases in the air that are just waiting for the moment so you will breathe them in. At that moment, they may not affect you, but sooner or later they make you sick when you least expect it. Every time we breathe the toxic gases, they are drawn into our lungs. One truck route runs through 23rd Street, right in front of my school. Around my school there are two more trucks routes. And around Richmond, there are many more. Wouldn't you be worried if you and your family were breathing toxins that could be killing you slowly? I would like to ask you to not wait any longer to make the changes that we have known for so long that we need to make. It is difficult to start, but it's not impossible. Nothing should stop us from pursuing just this. (RHS2)

34. **Comment**: I've been living in Richmond since birth. I'm here to talk to you about the diesel problem in our community. There are more than four routes that pass

near our school, especially the one that passes right in front of my school. There are two routes around my house. This problem is actually affecting us, the citizens. It is affecting our health. The percentage of kids from Richmond that are hospitalized for asthma is three times the percentage of kids in California. I understand that we have to be concerned about the jobs that are going to be affected by this rule. But on the other hand, the percentage of kids hospitalized is going to decrease by a lot. I know it's not easy finding a job now since the economy has gone bad. But the delay that is being proposed means more kids are going to be affected and get sicker. (RHS3)

Agency Response: We share your concern for people living near roadways, especially children who live, learn, and play in communities in close proximity to truck routes. Residents of these areas will reap considerable health benefits from the emission reductions that will be accrued due to the on-road truck and bus regulation. Also, see the response to Comment 19 for a description of changes to the Truck and Bus regulation and the Drayage Truck regulation since the Board Hearing that would help to mitigate the health impacts in environmental justice communities.

35. **Comment**: Truck routes run right along one side of my school just outside the fence around our football field. My house is also close to the truck route, four blocks to the nearest one. But I'm really more concerned about the impact diesel pollution might have on my little sister than I am about the impact it's having on me. My little sister is 14-years-old. So her lungs are still growing. I know you understand that children who are exposed to diesel exhaust are more likely to have asthma, and they also have reduced lung function. I also know that you care about these things, because you have been working on this problem for a long time. When the Board adopted the California's Diesel Risk Reduction Plan in 2000, my little sister was four-years-old. The plan set a goal of reducing diesel pollution by 75 percent by 2010. Of course, we haven't yet reached that goal. Then in 2007 and 2008, the Board adopted some important rules for trucks and buses and construction equipment. Those rules were going to reduce diesel particulate pollution by 75 percent by 2014 and then the recession hit. I agree there have been some changes to help truckers and construction workers in these hard times, but the proposal in front of you won't get us to 75 percent reduction on diesel pollution until 2023. By that time, my little sister will be 25-years-old. Her lungs will have stopped growing. She will have lost any chance to grow up with clean air. I'm here to say respectfully, please don't wait that long. You need to fix the proposal so that all trucks, old or new, have diesel filters by 2017. And old equipment needs to be retired faster. All the loopholes need to be closed. (MHS5)

Agency Response: The amendments to the regulation take into consideration the emission reductions resulting from the recession, some of which reduce localized impacts. These amendments were made carefully to reduce costs to the regulated community while maintaining the emissions reductions needed to protect public health. Please see the response to Comment 19 for a discussion of the health benefits of the regulation for environmental justice communities. Also, staff does not believe there are loopholes to be closed as indicated by the cleanup goals listed in the response to

Comment 19. Nearly all trucks will have PM filters by 2017. In addition, the response includes a description of changes to the regulation since the Board Hearing to require additional cleanup of older trucks that would help mitigate the health impacts in these communities. See also the response to Comment 5.

36. **Comment:** Policies should be made that benefit all people, and I believe that re-routing of trucks will help lower the asthma-related hospital visits for low-incomes families that reside in those areas. The diesel filters should be mandatory on all trucks. I believe my community will benefit greatly from the diesel filter. There should be an earmark to the amendment that, like tax breaks for people who comply with the filter, they should be guaranteed grants, like mom and pop truck companies. And there should be just an earmark that helps the economy as well. (KBAK)

37. **Comment**: I'm here because there are truck routes close to my school and my community and, of course, my house. The asthma hospitalization rate for children in the zip code where I live is much higher than the rest for children in California in general. People in my community are affected by trucks diesel pollution, but they are not getting much of the economic benefit from the freight of those trucks coming through the neighborhoods. The people who make the most money from the trucks live someplace else. If the companies that make a lot of money from shipping and selling the products that come into the port of Oakland could pay a little bit of money for every container that comes to Port of Oakland, then that could help my community and they could clean up the diesel trucks. I know this is an idea that Board has heard before. I think this should recommended as an idea to the Governor and the Legislature. Also, I think it should be on the ballot for election of 2012. Suppose that for every container that comes through the Port of Oakland the shipping company paid something like $30, that money would be used to clean up the trucks. And this would really help my community because of less pollution and less asthma in my community. (MHS2)

Agency Response: ARB does not have authority to affect traffic patterns or develop any tax-based programs to help reduce emissions. Any tax-based programs would have to be developed and approved by the Legislature and Governor. Regardless, several funding sources have already been allocated through proposition or by the Legislature to address emission impacts from diesel engines. Also, please see the discussion of the benefits of the Truck and Bus regulation in the responses to the preceding comments 18 to 35 on the public health impacts of exposure to diesel exhaust.

38. **Comment:** The Environmental Health Coalition in San Diego did sign onto the Environmental Coalition letter [or joint coalition letter] and we're in agreement with those recommendations. We're especially concerned about the on-road rule deadline roll-backs in our region. For one thing, it's not that clear to me that our communities have gotten any reprieve in particulate pollution due to the recession. Looking at levels of PM2.5 at the air monitor that's located in one of our environmental justice communities, Barrio Logan, we have not seen any

consistent decreases between 2006 and 2009 in the annual average levels. So questioning whether that highly-impacted community is really getting a break from pollution during the last three years. That community has also been working hard to finalize a new land use community plan which would allow water-front industries and residential communities to exist side-by-side in order to keep those jobs and make sure that air quality has improved for those residents. We need to make sure that every truck going through that truck or traveling through or visiting the port is as clean as possible in its emissions. Looking further south, the cargo terminal in National City receives mostly car cargos, so the trucks visiting that terminal are car carriers, which are exempt from the drayage truck rule. The only relief that community will see from truck particulate matter is from the on-road rule. So again, we're looking to that rule to help air quality in that community. And then looking way down at the border area, the area of our region with the most consistently high particulate levels is the Otay Mesa area where the Mexico/U.S. border crossings are. And although those are ports of entry, they're not subject to the emission -- drayage truck rules. So we need the on-road rule to help that community. Finally, I want to remind you, you've gotten a letter from the Port of San Diego expressing level playing field concerns between the drayage truck rule and the on-road rule. (EHC)

Agency Response: Please see agency response to Comment 19. Regarding the commenter's statement about Barrio Logan air quality, while we are not sure which air quality monitors the commenter is referring to, the closest San Diego Air Pollution Control District (SDAPCD) monitors to Barrio Logan are the Downtown and Chula Vista monitors. While we agree that there has not been a consistent decrease in PM2.5 annual average concentrations at these two monitors from 2006 to 2009, there has been a steady decline in PM2.5 levels at these monitors and all other SDAPCD monitors since monitoring began in 1999.

b) PM Emissions and Mortality

39. **Comment**: My trust in CARB's ability to objectively present the facts regarding PM2.5 is waning rapidly. Starting with cherry picking data to support loss of life due to PM2.5, it seems that upon being questioned about the data to support the mortality rate, the data changes. The answer depends on whether the subject is diesel PM2.5 or background PM2.5. CARB conveniently combines the data when it supports their desired end game. CARB has ignored studies that show PM2.5 has no effects on premature deaths. So my suggestions:

    (a) Hire a 3rd party scientific consultant with verifiable credentials to review all existing PM2.5 data (within CA and other states) and make conclusions/recommendations. This person should be vetted through the public arena to ensure true objectiveness and competency.

    (b) Hire an economist similarly qualified as the 3rd party scientist above to give a true picture of the economic impact of PM2.5 regulations on the local/state economy should it be implemented.

(c) CARB should openly and honestly answer questions regarding this legislation that is presented in local newspapers.

Currently the public's confidence in CARB's ability to objectively make decisions on its behalf regarding health issues is falling. (RTOM)

Agency Response: We do not agree that we have "cherry picked the data" to support loss of life due to PM2.5 exposure. We have carefully reviewed all studies that have been performed in the United States on the relationship between long-term PM2.5 exposure and mortality, as has the U.S. EPA in its recent review of the NAAQS for particulate matter. There are a few studies that do not find a relationship between long-term PM2.5 exposure and all-cause mortality, but the majority of studies do report a statistically significant relationship. In addition, U.S. EPA and we have also critically evaluated the methods used in each study so that we can place the most weight on the studies that have used the strongest methodologies. The effect estimate we have used from Krewski et al. (2009) comes from the largest and most rigorously and publically evaluated study in existence. The effect estimate for the relationship between long-term PM2.5 exposure and mortality from this study is being used by multiple agencies worldwide. The Krewski et al. (2009) estimate, though not the lowest in the literature, is toward the lower end of the range of results from American studies.

All-cause mortality is not the most appropriate endpoint to consider, because it includes many causes of death that have no plausible relationship with PM2.5 exposure, for example deaths due to complications of surgery, appendicitis, and systemic infections. Inclusion of these non-plausible deaths in effect dilutes the relationship between PM2.5 exposure and mortality. Moreover, the studies that have found no relationship between PM2.5 exposure and all-cause mortality have additional limitations that make it unlikely that they would be able to detect an effect. These limitations include the size of the study, particularly the number of communities included and the population distribution among those communities, population age, use of an indirect PM2.5 measurement method, and inadequate exposure assessment methodology.

Mortality from cardiopulmonary causes is supported by a large body of biological evidence, which is reflected in its stronger relationship with long-term PM2.5 exposure compared to all-cause mortality. There are no studies that have reported no effect for cardiopulmonary mortality. When analyses are limited to categories of deaths for which there is biological support, the relationship between long-term PM2.5 exposure and mortality is stronger than for all-cause mortality.

There are no established methods for routinely measuring DPM in ambient air. The ambient DPM concentration is estimated from an ambient air surrogate method developed using emission inventory data (and verified with ambient air monitoring results from research instruments), both for current conditions and with the regulation in place, to estimate the anticipated emissions reductions associated with the regulation. Due primarily to the lack of a routine monitoring method for DPM, there are no epidemiological studies that estimate population risk related to DPM emissions separate from other particle sources. DPM is less than 2.5 microns in diameter, and consequently falls into the PM2.5 size category. Because of the size fraction in which we find DPM, and also because the results of animal exposure studies suggest that

DPM is at least as toxic as other species within PM2.5, we make estimates of the mortality impact of DPM using the relationship between long-term exposure to PM2.5 and mortality.

Our conclusions about the relationship between long-term exposure to PM2.5 and mortality are in alignment with those of the U.S. EPA, the World Health Organization, Health Canada, and the British government. These conclusions have been publicly peer reviewed by multiple independent bodies worldwide. In addition, the methods used in ARB's economic analyses are comparable to those used by U.S. EPA and other regulatory agencies world-wide, and have also been extensively reviewed by multiple independent review groups. Consequently, there is no need for the additional reviews suggested by the commenter.

It is unclear from the comment what questions that have appeared in the local newspaper the commenter would have us answer.

40. **Comment:** While voicing our support for staff recommendations, we still question the science behind the finding of diesel as a Toxic Air Contaminant and further question the inclusion of NOx in the calculations for the PM2.5 as a basis for suggesting that there is not more harm to health from the regulation than from doing nothing. Rather, we contend that the costs in real terms to the availability of choices that will result from the economic harm cause by this rule. Passage and implementation will directly impact and influence decisions made by the most vulnerable members of our community resulting in greater harm than the pursuit of a standard for which there is so little epidemiological support.

    Specific to PM2.5, we have particular concern over the lack of transparency in the 2.5 assessment; the combination of diesel PM and background PM and the apparent cherry picking of data to support loss of life due to PM2.5, CARB has ignored studies that show PM2.5 has no effects on premature deaths. To address this, we suggest a 3rd party engineering firm be vetted and hired to perform the subject assessment and further, that the report be subjected to rigorous peer review prior to acceptance, and lastly, that stakeholders are informed and allowed to provide input at critical junctures (i.e. selection, vetting and acceptance of peer review methodologies). (WEAT1)

Agency Response: First, the commenter questions the finding of diesel particulate matter (DPM) as a Toxic Air Contaminant (TAC). In 1983, the California Legislature established a process for risk identification and risk management to address the potential health effects from air toxic substances and to protect the health of Californians. TAC identification is done through a public process outlined in State law that solicits public comments at several points, and includes public workshops with interested constituents. Application of this process requires staff from ARB and the Office of Environmental Health Hazard Assessment (OEHHA) to draft a report that serves as the basis for the TAC determination. ARB staff assesses exposure to the substance under consideration, and OEHHA staff evaluates the substance's health effects. After the required public comment periods and workshops, the report is reviewed by the independent Scientific Review Panel (SRP) for scientific accuracy. SRP

members are appointed by the Governor's office. If the SRP approves the report, its specific scientific findings are officially submitted to ARB, and are considered by the Board at a public hearing, followed by a vote by the Board on whether or not to identify the substance as a TAC. While we regret that the commenter does not agree with the listing of DPM as a TAC, the required process was followed in listing DPM as a TAC.

The second part of this comment concerns the relationship between NO_X and PM2.5. Diesel engines produce particulate matter through two processes: directly through the combustion process, and secondarily through atmospheric transformation of NO_X emissions. This secondary contribution is due to chemical reactions that occur in the atmosphere, which convert NO_X from the gas phase into particles. Estimation of the total PM2.5 emissions attributable to diesel engines requires consideration of both primary and secondary PM2.5 contributions.

ARB recognizes that the regulations under discussion will result in costs to truck and bus owners, and that the costs of the control strategies included in the regulation are readily apparent. The ARB must balance the cost of regulations against the adverse health impacts associated with elevated PM2.5 levels. For example, the scientific literature indicates that there is a greater incidence of adverse health effects in areas with higher vs. lower PM2.5 concentrations. These health effects include mortality, hospitalizations, and emergency room visits, among others. Each excess incidence of these health effects imposes a cost either to individual health insurance, to the public which pays for healthcare for people without insurance, or to income. Air pollution also reduces agricultural productivity, and thus increases the cost of food. PM2.5 influences visibility, and reduced visibility tends to reduce tourism to scenic locations, thereby reducing employment in and enjoyment of these locations. In short, air pollution has many more adverse effects than are generally appreciated.

The second paragraph of this comment covers much the same material as Comment 39. The reader is referred to the Agency response to Comment 39 for our response to this paragraph of the comment.

41. **Comment**: Hien Tran was the lead scientist on the study of "Premature Mortalities from the exposure of PM2.5", which is the basis for the PM2.5 regulations. He claimed to have a PhD from UC Davis, when in fact, he had a mail-order, fraudulent PhD from a fake university that lists a UPS store as its address. We demand that CARB suspend the implementation and rule-making processes of all PM2.5 regulations until a new study can be completed, peer-reviewed, and is made available for public comment.

    Furthermore, there is discussion within the scientific community regarding whether or not diesel is the largest emitter of PM2.5. Frederick W. Lipfert, in the Symposium on PM2.5 and Mortality presented on the 26th of February 2010 that no single source emits PM2.5, but rather PM2.5 particles come from many sources, which cannot be identified directly. In the same presentation, Lipfert also held the conclusion that national studies cannot be applied to California where pollutants and populations differ from states in the nation. CARB does not have accurate data regarding how much PM2.5 is emitted in California. CARB does not

have any conclusive study linking health risks to exposure of PM2.5. CARB does not have any conclusive study that suggests diesel emissions are responsible for the majority of PM2.5 pollution. CARB has misused public money during the course of its writing and implementation of diesel PM2.5 regulations through fraudulent actions of its employees and possibly some board members. CARB has misused tax-payer money by creating regulations before it has obtained accurate data. (JYOUNG)

Agency Response: ARB adopted the Truck and Bus Rule, in part, to meet California's legal obligations under federal law to achieve attainment with the NAAQS for PM2.5 by 2014. The emission reductions in the rule are critical to attaining federally mandated air quality standards. Primary diesel PM emissions are a significant contributor to overall PM2.5. In 2008, 20,600 tons of diesel PM were emitted in California. The amended regulation has been approved to accommodate the economic hardship of affected small businesses while still meeting the legal requirements and protecting the public health of all Californians.

ARB develops PM2.5 emissions inventories which cover all of the sources of PM2.5 emissions in California, whether generated from combustion of diesel and gasoline fuels or from other types of dust and particulate sources. These sources range from stationary sources like power plants and refineries; to mobile sources including cars, trucks, and off-road equipment; and to other sources like road dusts and wildfires. These inventories are developed using California-specific data reported directly by regulated facilities, obtained by research and testing programs, and developed using comprehensive emissions inventory methods like those used in the Statewide Truck and Bus Rule. The inventories are based on decades of research, reporting, and experience. In addition, the ARB and local districts maintain a comprehensive monitoring network consisting of more than 250 air monitoring stations in California. Data from this monitoring network is routinely used by ARB staff and others to help assure the quality of the PM2.5 emissions inventories. In general there is good agreement between PM2.5 observed in the ambient monitoring network, and in PM2.5 emissions estimates. Decreases in measured PM2.5 levels in the atmosphere track well with decreases in estimated PM2.5 emissions over the years, providing further validation of the emissions inventory

Please see the responses to comments 39, 40 and 59 for information on the scientific evidence that supports relationships between PM2.5 and diesel emissions exposures and premature mortality.

Regarding Mr. Tran, because he falsified his credentials he has been demoted, disciplined, and removed from all regulatory support work. The Board also directed staff to withdraw the original PM health report and prepare a new version, without input from Mr. Tran, which was completed in August, 2010. The report can be found at: http://www.arb.ca.gov/research/health/pm-mort/pm-report_2010.pdf.

The new PM health report updates ARB methods for quantifying premature death associated with long-term public exposure to PM2.5 air pollution. The method relies on a peer-reviewed risk assessment document developed by U.S. EPA as part of its current review of the NAAQS for PM2.5. The federal Clean Air Act gives the U.S. EPA

the responsibility to research and assess the health impacts of air pollution at the national level. California law gives the ARB similar responsibilities as part of the state's comprehensive program to reduce air pollution. The national studies reviewed by the U.S. EPA for the NAAQS assessment apply to California as well. In fact, as part of the federal standards review process, U.S. EPA estimated the premature deaths associated with PM2.5 in two California cities – Los Angeles and Fresno. The new report expands on that work by estimating mortality impacts of PM2.5 air pollution statewide.

42. **Comment:** The original report upon which you base your proposed regulations was later exposed to be written by a total fraud who received his PhD by mail order. Isn't that enough reason to completely throw out his recommendations? (PPIN)

43. **Comment:** You are working off of information provided by a bogus "expert." Please just stop. You are killing California. (GPAY)

44. **Comment:** CARB's regulations which have so devastated the trucking industry were based on a discredited report by a "Dr." Hien Tran, a CARB researcher who mail ordered his PhD from a phony university. However, even when it was discovered that Hien Tran had falsified his qualifications, CARB refused to fire him and stood by his study – a study that now even CARB itself admits overestimated pollution by more than 300%. (VCOOT)

45. **Comment:** Based on the improperly done study by Dr. Tran, I believe it is truly in your best interest to back off the restrictions until a new study can be conducted and affirmed by a separate (non CARB) affiliated source. (BHULZ)

46. **Comment**: I do not understand how a government for the people could impose job killing regulations on their own public based on phony statistics by a phony scientist. This agency is part of what has made California a laughing stock to the rest of the States. (JHOL)

47. **Comment**: I am writing in regards to the (now widely known) fraudulent study on diesel emissions. How can a government agency act so irresponsibly? You can't enact regulations that will potentially destroy the entire economy of California, based on junk science. The only chance you have to regain credibility with the public is to admit your mistakes, and retract these ridiculous studies. (EBARBO)

48. **Comment**: While we all want clean air, destroying our already unsound economy based upon faulty data is ludicrous. Basing decisions upon the rantings of "Dr." Hien Tran who mail ordered his PhD and overestimated pollution by 300% is so absurd that even the far-left San Francisco Chronicle disagrees. Please stop this madness and give California a chance to once again be the economic land of golden opportunity it once was before it's too late. (DVON)

49. **Comment:** The new regulations are based on bogus information. (SCHAT)

50. **Comment:** These new regulations are based on phony research by phony Hien Tran, and you all know it. (HNAP)

51. **Comment:** Aside from the very serious impact diesel regulations will have on our jobs and economy, they are based on a study by a researcher who both falsified his credentials and overestimated pollution by up to 300%. This is not a sound basis for policies which harm the livelihoods of California citizens. (COEU)

52. **Comment:** Your studies appear to be flawed. Please do not pass any new laws. (AKELL)

53. **Comment:** I understand that you are basing your actions on fraudulent data from a bogus researcher who purchased a false degree documenting him as a PHD. (SFIN)

54. **Comment:** I can't believe you guys are going to help further destroy the state's economy by giving credence to a bogus "study" by a fake PhD. (SSTAL)

Agency Response: Please see the response to Comment 41

55. **Comment:** Where is that pesky Tran report that was supposed to be done on California specific environment, not national? (DCC2)

Agency Response: The report that the commenter is referring to was released in August of 2010. It can be found at: http://www.arb.ca.gov/research/health/pm-mort/pm-report_2010.pdf.

56. **Comment:** I attended a CARB talk given where we were told we are living in a pollution hot spot. And I quote; we are living in a "pollution hot spot, one of the worst in the U.S." We got a real guilt trip on that one laid on us. I'm not alone in my concern about this intimidation. I belong to a group of like-minded experts and scientists in the Nor Cal Tea Party where our purpose is to explore untruthful statements. I'm afraid that the gross costly error committed by the MTBE, well water contamination that went on for years and years, and the fraudulent PM2.5 report resulting in millions of dollars of fines will be repeated today. Because of this, businesses will close. By the way, these fines that were imposed on these eleven companies back in March have not been returned, over millions of dollars. As a California resident, the senior resident by the way, forever 50 years, I have seen the lifestyle enjoyment disappear completely. Please consider the decisions you make today carefully. (NCTP)

Agency Response: Please see response to Comment 41 regarding "fraudulent PM2.5 report." We cannot respond to the "living in a pollution hot spot" reference because we do not know where or when this occurred or the context in which it was presented. We also cannot respond to the comment regarding fines to eleven companies without more specific detail about the fines.

57. **Comment:** The last time I was up here in 2008, there were staff members and Board members that knew that that researcher you had didn't have any certificates like he said he did. And you guys held it back from the rest of your Board members. And you did not let them know. In my opinion, that's corruption, because you, as Board members, are supposed to take care of the people of the state of

California to do the best for the state of California for the population of the state of California, not to do your own agendas. And this Board has costs millions -- actually billions of dollars of companies that have already retrofitted, updated for garbage information that you guys took into consideration knowing that you have professors from UCLA and other universities saying that the information you guys have are incorrect. And you guys do not look at that. To me, that's corruption. (TLT)

58. **Comment:** There is ample evidence in the record for you, as Board members, to question the public health benefit of this program. And that's been entered several times over the last year-and-a-half. There was a question of whether there is a correlation between fine particulates and adverse health benefits when you use California-only data. We believe that, with all this new information, the right thing to do is to step back from the regulation and make sure you have the best information available. We urge you to take that step. (CIOMA)

Agency Response: Please see the responses to Comments 41 and 59.

59. **Comment**: The attached table[7] on the relationship between PM2.5 and total mortality in California is directly related to the calculation of premature deaths associated with diesel particulate matter in California. These premature deaths provide the primary public health justification for the CARB on-road and off-road diesel regulations. (ENSTR)

[7] The table was submitted as an attachment to the commenter's letter that was submitted during the 45 day comment period. It is identified as Comment 146 of the 45-day written comments posted to the comments log for this rulemaking at http://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=on-offroad10.

Major Epidemiologic Studies of PM2.5 and Total Mortality in California
(http://scientificamericaninstitute.org/PM25RRs121510.pdf)

Relative risk of death from all causes (RR and 95% CI) associated with increase of 10 ug/m³ in PM2.5

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December 15, 2010

McDonnell 2000	CA AHSMOG Cohort (N=3,800 [1,347 M + 2,422 F]; Adventists in 9 airsheds used to estimate PM2.5)	RR = 1.03 (0.95 – 1.12) during 1976-1992
Krewski 2000 (from Krewski 2010)	CA CPS II Cohort (N=40,408 [18,000 M + 22,408 F]; 4 MSAs; 1979-1983 PM2.5; 44 covariates)	RR = 0.852 (0.805-0.944) during 1982-1989
Enstrom 2005	CA CPS I Cohort (N=35,783 [15,573 M + 20,210 F]; 11 counties; 1959-1983 PM2.5)	RR = 1.039 (1.010-1.069) during 1973-1982 RR = 0.997 (0.978-1.016) during 1983-2002
Enstrom 2006	CA CPS I Cohort (N=35,783 [15,573 M + 20,210 F]; 11 counties; 1979-1983 & 1999-2001 PM2.5)	RR = 1.062 (1.017-1.106) during 1973-1982 RR = 0.995 (0.968-1.024) during 1983-2002
Zeger 2008	"West" portion of MCAPS Cohort (3.1 M [2.5 M M + 1.6 M F]; Medicare enrollees in CA+OR+WA; 2000-2005 PM2.5)	RR = 0.989 (0.970-1.008) during 2000-2005
Jerrett 2010	CA CPS II Cohort (N=95,000 [42,000 M + 53,000 F]; ~50 counties; 1999-2000 PM2.5)	RR = 0.994 (0.965-1.025) during 1982-2000
Krewski 2010	CA CPS II Cohort (N=40,408; 4 MSAs; 1979-1983 PM2.5) 44 covariates (N=50,930; 7 MSAs; 1999-2000 PM2.5)	RR = 0.960 (0.920-1.002) during 1982-2000 RR = 0.968 (0.916-1.022) during 1982-2000
Ostro 2010	CA Teachers Cohort (N=45,000 [45,000 F]; 2002-2007 PM2.5)	RR = 1.8 (1.6 – 2.0) during 2002-2007

Agency Response: ARB adopted the Truck and Bus Rule, in part, to meet California's legal obligations under federal law to achieve attainment with the NAAQS for PM2.5 by 2014. The emission reductions in the rule are critical to attaining federally mandated air quality standards. The present amendments to the Truck and Bus Rule have been adopted to accommodate the economic hardship of affected businesses while still meeting the legal requirements and protecting the public health of all Californians.

The federal Clean Air Act requires U.S. EPA to promulgate NAAQS for six criteria pollutants, including particulate matter (both PM10 and PM2.5), which are based solely on public health considerations. The Clean Air Act also requires that all states meet the federally established NAAQS by designated target dates.

The California Legislature assigned ARB the State's responsibilities under the federal Clean Air Act. These federally mandated responsibilities include development of plans and regulations that will bring California into compliance with the health-based NAAQS by the required target date. Much of California does not currently meet the NAAQS for PM2.5. Because of this, ARB is required under federal law to develop regulations to

reduce statewide emissions of PM2.5 to the extent necessary to achieve attainment of the PM2.5 NAAQS in all parts of the State. The particulate matter that is emitted by diesel engines is in the PM2.5 fraction of particulate matter, and reductions in DPM emissions are necessary for the state to attain the PM2.5 NAAQS, in addition to reductions in emissions of PM2.5 from other sources.

The goal of regulations is to protect public health by reducing emissions to the extent necessary to attain the health-based NAAQS. In adopting such regulations in California, the Board must find that the regulations are necessary, technologically feasible, and cost effective.

Mortality and other health endpoint count estimates come into the regulatory process only at the point of estimating the costs vs. the benefits of a regulation. We have chosen to use the same concentration-response function from the same study that U.S. EPA used to estimate the relationship between long-term exposure to PM2.5 and mortality (Krewski et al. 2009). Use of the same study as used by U.S. EPA puts cost-benefits analyses of California's regulations on a level scale with those of other states, and the federal government. The sole point at which the concentration-response function selected enters into the regulatory process is for the cost-benefit analysis.

Specifically, we used the estimates in Krewski et al. (2009) from Table 33, which were adjusted for 44 individual level covariates, and for seven ecological factors. These estimates are the most appropriately modeled of those presented to take into account both individual and ecological confounders. We recognize that the estimated number of deaths depends on the effect estimate used. As will be seen from the following discussion, the estimate we have chosen is conservative, and we believe that it is the most defensible estimate available.

The table submitted by the commenter shows a selection of alternative effect estimates for the relationship between long-term exposure to PM2.5 and mortality that he proposes ARB use in benefits analyses instead of Krewski et al. (2009). There are strong technical reasons for not selecting any of the alternatives proposed by the commenter. A key consideration in making estimates of premature mortality is to recognize who the at-risk population is. Collectively, the health science literature on PM2.5 indicates that the population most at risk of premature death with exposure to PM2.5 has chronic heart or lung disease and is between about 55 and 75 years of age.

Starting at the top of the table, the McDonnell et al. (2000) study has a small number of subjects, many of whom were not old enough to be in the at-risk population. PM2.5 exposure was estimated based on airport visibility, not measured, and some of the participants lived as much as 35 miles from the airport used to estimate their exposure, both of which would introduce considerable exposure misclassification. Subjects were stratified into three groups: over and under 65 years of age, and over 85 years of age. Preliminary analyses indicated that the hazard functions were not the same for the three groups. Ultimately, the over 85 years of age group was not included in the analysis because the coefficients for the model variables for this age group were dissimilar from those of the other two groups, and the number of subjects in this age group was small. The two exposure misclassification issues, coupled with the small number of subjects and deaths, led to effect estimates with very large confidence intervals. In short, the

study has insufficient statistical power to demonstrate whether or not there is a significant effect of long-term PM2.5 exposure on mortality.

Table entries two and seven are analyses of the four and seven metropolitan statistical areas where the California portion of the ACS study reside. The data are derived from Krewski et al. (2000) and Krewski et al. (2009). These analyses have too few data points (four and seven, respectively), and thus insufficient statistical power, to allow meaningful conclusions. It should be noted that these results are not published, and Dr. Krewski and the Health Effects Institute released them only reluctantly, and neither is willing to stand behind them.

The study by Enstrom (2005) also has a relatively small number of data points (11), and much of the population is beyond the at-risk age group. It does not make sense to talk about premature death in people who are over 75 years of age (the few currently surviving members of the cohort are in their 90's). Enstrom (2005) also reported that when the subjects were split into two groups based on whether they were above or below 65 years of age in 1973, the beginning of the follow-up period, there was a statistically significant effect in the younger group throughout the full exposure period that was of similar magnitude to that reported by Krewski et al. (2000, 2009) for people of similar age, but no effect in the older group. This result is in agreement with other literature that has investigated the influence of age on risk of PM2.5-related mortality.

The regional analysis in Zeger et al. (2008) is difficult to interpret. The highest effect was observed in the central U.S., which also had the lowest PM2.5 levels. In addition, the statistical power of the western analysis was considerably less than that for the east. Moreover, the considerably larger counties in the west probably lead to greater exposure misclassification in the west, in that the investigators used only one monitor per county, regardless of its geographical size. Zeger et al. (2008) also found that the influence of PM2.5 exposure on mortality was greatest in people between 65 and 75 years of age, less in people between 75 and 85 years of age, and not detectable in people over 85 years of age.

The Jerrett (2010) analysis referred to was a preliminary analysis presented at a symposium. The study had not been completed at the time of the symposium. While the final report did not find a significant risk for all-cause mortality, there was a risk for cardiopulmonary mortality that was similar to that reported for the U.S. by Krewski et al. (2009). The study has not yet been published.

The estimate presented for Ostro et al. (2010) is incorrect. The authors determined that there was a calculation error in the results published, and they have issued errata for this paper. The correct risk estimate is 1.05 (95% CI: 0.96 – 1.16), which although not statistically significant is similar to that of Krewski et al. (2009).

The effect estimates in the commenter's table from the Krewski et al. (2009) study are from table 33, as is the estimate we are using, but they have not been adjusted for ecological confounders, and are thus not the most appropriate to select. The commenter cites incorrect years for both RR estimates presented. The correct years are 1979-1983 for the 1.028 estimate, and 1999-2000 for the 1.036 estimate

In summary, the commenter presents a table of effect estimates from studies that either have insufficient statistical power to show whether or not there is an effect, that are not peer reviewed and published, or that are based on populations in which one would not expect to see an effect due to subject age. In addition, the table omits more studies than it includes. The table omits the majority of published, peer reviewed studies that have been performed in the U.S. Virtually all of the omitted studies report a statistically significant association between long-term exposure to PM2.5 and all-cause mortality, often larger than the ~5% effect estimate we have applied in our cost-benefit analyses. While the commenter's table focuses on the lowest estimates available (published or not), the ones left off of the table range up to several times the estimate we have used.

3. Inventory

a) Emissions Inventory Methodology

60. **Comment:** We appreciate the responsiveness of the staff to the new emissions data and the extensive efforts to make the necessary inventory adjustments in the short time frame. However, we are concerned the sudden drop in diesel emissions gives a false sense that we can back off reduction commitment in the SIP. The latest round of amendments to the diesel rules for trucks, buses, and off-road equipment goes much too far in dialing back the health protective requirements of the original measures. The proposals utilize the full margin created by the inventory adjustment, making SIP compliance somewhat uncertain. Of most concern is that our lungs do not benefit from inventory adjustments. While the diesel emissions inventory may now be much smaller due mainly to technical accounting changes, that doesn't change the fact that communities throughout the state suffer from the ills of diesel pollution from trucks and heavy equipment. We urge you to use the newly created margin of emissions cautiously. Please preserve more of the health protection of your regional diesel rules. (NRDC3)

61. **Comment:** The changes in the emission inventory are quite dramatic from our perspective and we were certainly quite surprised by the changes. Clearly, the success of these lifesaving regulations is largely hinged on this emissions inventory particularly because I know this Board is so very mindful of its SIP commitments and our federal clean air commitment. So in that regard, we do applaud your efforts to ensure that. But we also second the comments about ensuring that we're erring on the side of caution so we are protecting the lives and that we're meeting our SIP commitments and not find ourselves short and not be able to get past that goal line. We are also concerned that -- or actually would like to have better understanding to what extent ARB sees the need to do air quality modeling now that the emission inventories for off-road has changed since a lot of the modeling was done prior to the inventory changes. We want to ensure the real experience that's happening in California this -- isn't just an accounting situation but really about trying to improve the air quality in our communities. And I also just want to second the comments about working with EPA to ensure that we have accurate inventories and in fact they are going to be -- again, be mindful of our federal SIP commitments, wanting to ensure it is something we can submit. We

don't want to be at a place either through the mid-course review or particularly when 2014 comes that we are falling short because the emissions inventory is not acceptable to EPA. (CCAIR3)

Agency Response: In designing the regulatory amendments, staff was very careful in ensuring that our overall SIP commitment was met. Our analysis clearly demonstrated that emissions from trucks, buses, and construction equipment were much lower by the end of 2010 than previously anticipated in the SIP. Our forecasts strongly suggested that emissions would also be lower in 2014 under the originally adopted regulation. The regulatory amendments ensured that the revised regulation will continue to generate sufficient emissions reductions to meet federal SIP commitments while providing the regulatory relief necessary to ensure that fleets could comply with the regulation.

The most significant change in emissions from trucks, buses, and off-road equipment was the impact of the recession. An emissions accounting that incorporates the impacts of the recession, future emission changes, and the benefits of the new SIP measures is the appropriate approach to assess the adequacy of the PM2.5 SIPs now close to final implementation. This accounting was performed as part of the PM2.5 SIP revision submitted to U.S. EPA in May 2011 for the South Coast and San Joaquin Valley air basins. As a result of this accounting, ARB found that these air basins remain on target to achieve the PM2.5 standard in 2014. ARB Resolution 10-44 directs the Executive Officer to monitor the state's progress toward meeting its emissions reduction commitment and to provide an update to the Board in 2012. ARB will identify any potential emission reduction shortfall and take action, if necessary.

There has been no significant change to the fundamental science and air quality modeling used to set the 2014 emission targets in the South Coast and San Joaquin Valley. The new emissions inventory data primarily impact current emissions and estimates of future emissions as the economy recovers and do not substantially change the total regional emissions in the base years. The recession does not impact the SIP base year modeling since both regions used base years prior to the recession. Small changes in the base year emissions due to methodology improvements would not substantially change the fundamental relationship between emissions and air quality in the base year modeling. Therefore, the air quality modeling and the 2014 emission targets are still sound.

4. Regulatory Provisions

a) Tow Trucks

62. **Comment:** On behalf of the membership of the California Tow Truck Association (CTTA) we are writing to express our continued reservations with the California Air Resources Board (ARB)'s Truck and Bus Regulation.

Founded in 1969, the California Tow Truck Association represents over 1,000 towing companies within the state of California, providing vital services to the state's motoring public. Our members employ approximately 15,000 people

across the state. Unfortunately, the current poor economy continues to wreak havoc on our members' companies.

While the recent proposed amendments may provide some much needed relief for our membership, without even further delay or modifications the regulation will have dire financial implications upon our industry, at a time when our industry can least afford it. The economic reality will be a shortage of tow trucks being able to respond to minor and major traffic incidents throughout the state. Tow Truck response times to these incidents will increase causing increases in the amount of time thousands of vehicles will sit idling in traffic gridlock. As a result, health considerations will be compounded and the safety of our state's motoring public will be jeopardized. (CTTA1)

63. **Comment:** As we have discussed on many occasions with ARB Staff, heavy-duty tow trucks of 33,001 GVWR and above continue to be particularly impacted by the regulation, as they tend to be traditionally driven for only a low number of miles each year (thus tend to be long-lasting, yet older model trucks) and, as specialty trucks, are extremely expensive to replace. Replacement costs for these specialty trucks range between $325K to $750K, very similar to the replacement costs for emergency vehicles such as firefighting apparatus. Unfortunately the rule does not differentiate between a long-haul truck driving 200K miles/year and such a heavy-duty tow truck driven only 30K miles/year; the schedule for replacing both trucks is based solely on its model engine year. Furthermore, retrofit devices are oftentimes impractical as modification to these trucks would cost far more than just the retrofit device installation. Bodies would have to be modified to create space to physically enable installation. This process would be both costly and time consuming resulting in excessive out of service time.

It has always been our argument that these heavy-duty low-mileage vehicles are utilized to clean-up the most disastrous accidents on our roadways as part of the CHP and local law enforcement tow rotation lists. With so few miles driven and such a huge cost of replacement (hundreds of thousands of dollars in specialty equipment), these trucks understandably tend to be replaced at a slower pace than smaller tow trucks. Our members have mortgages on these trucks, and their business model is based on the assumption that they can get decades of service out of the vehicles. Requiring them to replace these trucks ahead of schedule will have one of two direct consequences – get out of heavy-duty towing completely or take a massive financial risk in an unstable economy by purchasing a new heavy-duty tow truck to meet the rule requirements. Either way there's a strong likelihood there will be less heavy-duty tow truck operators in California. As such, roads will remain uncleared, traffic will back up, vehicle emissions will increase, and our economy and environment will be further harmed. It is ironic that the very air the rule is designed to clean will actually become even more polluted. We urge you to strongly consider concessions for these heavy-duty tow trucks, as well as delaying the rule until California's economy fully recovers. (CTTA1)

Agency Response: We acknowledge the significant impact of the recession on California's economy and on companies that rely on diesel engines – whether it is trucking and transportation businesses, construction companies, or airlines. Overall, businesses' revenues and employment are down, and this has reduced the ability of many fleets to make the investments needed to comply with the regulation. In consideration of the economy, the regulation was amended to provide more time and to lower compliance costs for affected fleets while preserving emissions benefits and protecting public health.

The amendments reduce the compliance costs of the existing regulation for all affected fleets by reducing the number of required PM filters, providing a longer period of time for retrofitted trucks to operate before having to upgrade to a 2010 MY engine or equivalent, delaying truck replacements and extending various credits. Changes to the credits and other special provisions provide further flexibility and reduce the annual compliance requirements. Further delays of the regulation could not be provided without impairing the State's ability to meet national ambient air quality standards (NAAQS) and diesel PM health risk reduction goals.

The actions an individual company would have to take to comply with the regulation would depend on factors such as the size of the fleet, the vehicle types, vehicle age, and normal vehicle replacement practices. From discussions with tow truck companies and CTTA representatives, staff obtained some information about the characteristics of tow truck fleets. We understand that on average, tow truck fleets have more light duty vehicles (those with a GVWR less than 26,001 lbs) than heavier tow trucks. The amended regulation eliminates PM filter requirements for this lighter class of vehicles, delays the start of the replacement requirement to 2015, and limits the replacements to engines 20 years old or older until 2020. From 2020 to 2023 all engines need to be upgraded to 2010 model year engines or equivalent. We also understand that although most tow trucks travel relatively few miles, most tow truck companies replace these lighter tow trucks at a rate ahead of what the amended regulation would require. Therefore, the amended regulation is not expected to result in changes to the normal vehicle replacement practice for nearly all lighter tow trucks and there will not be a reduction of the numbers of lighter tow trucks available to respond to traffic incidents throughout the state.

For heavier vehicles, fleets can defer all replacements until January 1, 2020 by using the PM filter phase-in option. Most tow truck fleets would have no early replacements until 2020 and at that time could upgrade to 10 year old replacements to comply. In addition, if a suitable PM retrofit is not available, no other action is required to meet the PM reduction requirements until 2018.

Small fleets with heavier trucks with a GVWR greater than 26,000 pounds also have the option to delay the initial PM filter requirements until 2014 and can defer engine replacements until January 1, 2020 or later based on the engine model year.

Staff believes that the flexibility provided in the regulation and the reduced requirements of the amended regulation significantly lowers the compliance costs for all fleets and are not expected to have a negative effect on the level of tow truck support on our roadways.

5. **School Bus Requirements**

a) Delay Regulation

64. **Comment:** We believe it would be prudent to study the impact of the active filters both from an economic and health perspective. We would urge ARB to postpone the regulations until that study is done. (STC)

Agency Response: Installation of an active PM filter is only one option that school districts can choose to comply with the regulation. Other compliance options include installation of a passive PM filter, engine repower, or bus replacement depending on the age, maintenance history, and usage characteristics of the school bus engine and chassis.

ARB, school districts, and other stakeholders have extensive experience with the operation and performance of active diesel particulate filters (DPF) or PM filters on school buses, therefore further study is not required. Thousands of PM filters have been installed on school buses throughout the state and have proven to be successful. Approximately 4,000 school bus PM filters have been funded by the Lower Emission School Bus Program alone, and the majority of those are active PM filters. Retrofits are also the least expensive compliance option. The cost of an active filter is about $17,900 including installation. Based on data from end users and retrofit manufacturers, the cost of electricity needed to power the routine PM filter cleaning procedure is about $11,000 over a 20 year life. By comparison, the cost of a new diesel school bus is approximately $156,000. Even when the lifetime costs of retrofits are compared to the lifetime cost of a new bus, retrofits are still 3 to 5 times less expensive.

Please see the Agency Responses to Comments 65 and 76 for information on detailed studies that document the health benefits of reducing exposure to diesel particulate matter.

65. **Comment:** ARB's regulations may not improve the health of our children. It may even have the opposite impact. It would be a wiser strategy to wait on the regulations and to work together to obtain additional funds to replace the oldest school buses. (STC)

Agency Response: The commenter speculates as to potential generalized health impacts that could occur from implementation of the amended regulation with no specific evidence to support the claims. In contrast, the rulemaking record clearly shows that postponing or excluding regulation of diesel exhaust PM from school buses would result in the loss of significant emission benefits, increased exposure of children to toxic contaminants, with consequential detrimental health impacts, and increased health care costs.

The Children's Health Study, which began in 1992, was a large, long-term study of the health effects of children's chronic exposures to air pollution. About 5,500 children in twelve communities were enrolled in the study; two-thirds of them were enrolled as

fourth-graders. Data on the children's health, their exposures to air pollution, and many factors that affected their responses to air pollution were gathered annually until they graduated from high school. One of the most consistent results of the study is a reduction of lung development with exposure to higher concentrations of particulate matter, nitrogen dioxide, acid vapor, and elemental carbon. Children living in communities with higher concentrations of these pollutants had lungs that developed and grew more slowly and were less able to move air through them. Decreases in lung development were seen at age 18 in polluted communities. By age 18 the lungs are nearly mature and the decreases in lung development are unlikely to be reversed. Therefore, the children may have permanent adverse respiratory health effects in later life.

In order to protect children's health while recognizing the financial constraints faced by school districts, ARB agrees that it is important to work together with school districts and other stakeholders to identify new funding opportunities to complete the school bus clean-up. At the December 17, 2010 hearing, the Board directed staff to identify potential opportunities for additional funding that will help to complete the school bus clean-up, and work is currently underway to carry out that direction

b) Exemption for Smaller School Buses and Extension for Private Fleets

66. **Comment**: Preserve the original clean up requirements for all school buses, large and small (less than 26,000 pounds), with a commitment to ensure funding where necessary. We are concerned that there is pressure to delay or relax clean up requirements for school buses despite the fact that millions of dollars of funding has been made available to school districts across the state. According to numerous studies, including one from this agency, children can be exposed to very hazardous levels of diesel pollution on uncontrolled school buses, increasing cancer risks, and incidence of other health impacts such as asthma. The amendments proposing delayed compliance for short buses (those under 26,000 pounds) should not be considered on the simple grounds that all children should be provided safe transportation to school, whether they ride large or small buses. (BWG1)(BWG2)

67. **Comment:** Add mandatory PM retrofits for school buses under 26,000 pounds and prioritize incentive funding to cover the costs. (DFS1)

68. **Comment**: We believe that children riding on school buses less than 26,000 lbs GVWR should be given the same opportunity of cleaner air as those riding on the larger buses and therefore these lighter school buses should also be required to install Level 3 PM retrofit devices. (MECA1) (MECA2)

69. **Comment:** We also especially want you to preserve the school bus cleanup provisions, since that's where our kids are very frequently exposed. (SCC)

70. **Comment:** We ask that you preserve the school bus cleanup provisions for all sizes of school buses. We know that children are particularly vulnerable. The soot pollution effects the growth and development of their lungs, and we know there's funding out there. We need to work together and get additional funding, but we do

believe there should be equal protection for all children riding on school buses. (ALAC1)

Agency Response: Staff originally proposed to exempt diesel-fueled school buses under 26,001 lbs. GVWR from the amended regulation. However, the Board chose to include school buses greater than 14,000 lbs. GVWR in the amended regulation and directed staff to make necessary changes to preserve the requirements for smaller school buses. As such, the amended regulation requires owners of all diesel-fueled school buses greater than 14,000 lbs. GVWR to be equipped with Best Available Control Technology (BACT) which requires engines equipped with the highest level verified diesel emission control for PM that is available. The amended regulation requires both publicly owned and privately owned school buses to meet the same compliance schedule, affording all school children similar health benefits.

In order to protect children's health while recognizing the financial constraints faced by school districts, ARB agrees that it is important to work together with school districts and other stakeholders to identify new funding opportunities to complete the school bus clean-up. At the December 17, 2010 hearing, the Board directed staff to identify potential opportunities for additional funding that will help to complete the school bus clean-up, and work is currently underway to carry out that direction

c) Replace Not Retrofit School Buses

71. **Comment:** There is one recommendation that you have that we actually kind of agree with. And that is the one that says in 2018 if a bus does not have a trap, then it has to be replaced. Now, we don't agree with the part about the trap. But we do agree that in 2018 buses like pre-'87s should be replaced. In fact, we would actually -- and the reason you have it there is because it's 30 years. And we would actually urge you to continue that type of regulation to say that maybe all buses, as time goes when we reach the age of 30, they should be replaced. In fact, we would ask you to move it down to 25 over time. CDE says buses should be replaced when they're 15. If you can get those old buses off the road, you'll do more to children's health than anything. (SES)

72. **Comment:** At a minimum, these regulations should be changed to say that all pre-1987 school buses should be replaced by 2018. (STC)

73. **Comment:** I have 25 buses that are 25 years and older. I want them to be clean and I want them replaced. Help us get there. I can't put a trap on a 25-year-old bus that's going to be reliable. Let's not spend $15,000 to put [a retrofit device] on a bus that's worth five. (ELKG)

74. **Comment:** And also in regards to maintenance, the newer buses that come with the devices have been far more successful than applying retrofits. Many of my school buses to be retrofitted are 20 years old. And to put a $15,000 retrofit on a 20-year-old bus, like some of the other guys were saying, is extending the buses out beyond their useful years (LUSD)

75. **Comment:** Why does ARB want to take a post 1986 school bus that is worth less than $20,000 and is probably leaking air pollution into the bus cabin and place a $15,000 retrofit device on that bus which will end up costing well over cost of the filter and force those students to ride in those school buses for the next 15 years instead of focusing the limited dollars on replacing those old school buses with modern school buses that contain seat belts, are fuel efficient – saves fuel, will uses alternative fuels in many cases, and will result in lower pollution and in lower greenhouse gases? (STC)

76. **Comment:** We have always argued for the replacement of the pre-1987 schools buses as the best strategy for the state and the children. We believe that PM savings would increase under this strategy. We did a very preliminary cost/benefit analysis. We were handicapped by not knowing precisely the emissions from a pre-1987 school bus and a 2006 school bus that had an active filter. We "borrowed" school emission data from a report done by the Union of Concerned Scientists. In this analysis, we found the cost per pound of PM emissions to be $329 for the replacement bus and $382 per pound for the active filter. In addition, the replacement school bus saved 6,000 lbs of NOx during the 15 years, reduced greenhouse emissions, was far more fuel efficient, addressed the environmental justice issue and was safer because it contained seat belts. All these factors, with the exception of the fuel savings, were not part of the analysis.

    The ARB staff was insistent that the active filter method was more efficient because the cost of seven filters equaled the cost of a new bus. When we asked to see the cost analysis, we were presented with data that showed that the total ARB strategy was cost/effective, not an analysis comparing the cost benefit of a new school bus compared to the installation of an active filter.

    As far as we know, ARB staff has never done any pilot studies on the service cost of filters. We do not know if they have observed the "burning" off or the five-hour cleaning of an active filter usually done right next to a school facility. They have never kept records of the total cost or performance of the active filter nor examined the impact of the filter on the emissions of the school bus. An active filter was used to study the impact of exhaust gas on the children riding a bus, but the pollutants from the trap-outfitted bus appeared higher than expected and it was decided that the filter was not working properly. No follow-up study was performed. (STC)

Agency Response: PM filters are one option for meeting BACT on post-1986 model year school buses and are effective at reducing harmful diesel exhaust emissions exposure, particularly to vulnerable school children. Several studies[8] conclude that

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[8] Solomon, G. M., Campbell, T. R., Ruderman Feuer, G., Masters, J., Samkian, A., Paul, K. A. 2001. No breathing in the aisles. Diesel Exhaust Inside School Buses. Natural Resources Defense Council. Coalition for Clean Air.

Fitz, D. R., Winer, A. M., Kozawa, K., Pandratz, D., Bumiller, K., Gemmill, D., Smith, M. 2003. Characterizing the range of children's pollutant exposure during school bus commutes. Final Report to California Air Resources Board, Research Division, Sacramento, CA.

installing retrofits improves the indoor air quality on a school bus as it reduces exhaust emissions. As described below, school bus owners have the choice to use available funding for the purchase of a new school bus which arrives from the manufacturer equipped with a PM filter or for the purchase of a retrofit PM filter.

As previously discussed, school bus owners may choose to replace buses instead of utilizing retrofit PM filters and are not prohibited from replacing their oldest and most polluting school buses prior to 2018. Typically, school buses with 1987 and newer model year engines can be successfully retrofitted or will be originally equipped with PM filters, while 1986 and older model year engines cannot be equipped with PM filters and will need to be replaced by a newer model year engine that can be equipped with a PM filter.

Thirty year lifetime costs for a passive PM filter, an active PM filter, and a new school bus are $29,200, $50,750, and $172,200, respectively. The lifetime cost of an active PM filter includes electricity costs for filter regeneration, cleaning and de-ashing, and potentially a replacement filter to extend the life of the system. Even when considering the life time costs of retrofit PM filters, they are still three to five times less expensive than a new bus.

In compliance with AB 1085, all emission data was made available for public review prior to the regulatory comment period. Emissions data and emission support documents, including school bus data, were included in the background materials available at http://www.arb.ca.gov/msprog/onrdiesel/ab1085compliance.htm.
As explained during the staff presentation at the December, 2010 Board hearing, an investment of $140,000 can be used to purchase one replacement bus or retrofit seven buses with PM filters.

d) School Bus Service Transportation Reduction

77. **Comment:** We are concerned about the cuts and reductions to school transportation. School districts have taken cuts of over 20%. There are fewer school buses on the road; our children are walking longer distances. Several school districts have completely eliminated school bus services and many are planning to do so in the near future. Congestion and air pollution have increased as families that can afford to do so are transporting their children in the family car. It was not coincidental that the San Joaquin Valley was just hit with a $27 million fine because they were out of compliance for two days in August and these two days were the first two days of school. (STC)

78. **Comment**: These mandates would have the unintended consequence of increasing congestion and thereby increasing air pollution. (SUHSD) (MPPSTA) (OUSD) (CASTO1) (WCTA) (PUESD) (CASTO2) (KCUT) GVUSD)

Fitz, D. R., Winer, A. M., Kozawa, K., Behrentz, E., Pandratz, D., Gemmill, D. 2006. Evaluation of mechanisms of exhaust intrusion into school buses and feasible mitigation measures. Final Report to California Air Resources Board, Research Division, Sacramento, CA.

Agency Response: Staff recognizes that the installation and maintenance of diesel particulate filters represents an additional cost. However, PM filters are standard equipment on all new diesel school buses which means that school districts must include maintenance costs in their budget anytime a new diesel school bus is added to the fleet. Additional costs to school districts due to the PM requirements of the amended regulation would be the cost of PM filter installation on existing buses and the cost of replacing buses where PM filters cannot be installed. Replacement can be done through purchase of newer used buses that have a PM filter already installed or that can be retrofitted with a PM filter after purchase, both of which effectively reduce the cost of the regulation below what many commenter's have suggested. Additionally, the cost of the regulation is spread out over a number of years, which should provide the time needed for school districts to factor these costs into their budgets.

Student transportation has been declining steadily since 2002 as school districts across the state have reduced or eliminated school transportation services. Staff does not anticipate that the regulation will have an impact on this trend. Staff conducted a survey of school transportation trends in 2009 and again in 2010. Both surveys indicated transportation reductions from more than half of the responding transportation managers. A quarter to a third of the responding transportation managers indicated no changes to their routes while a small percent indicated increasing routes. Decreases in routes were attributed to budget cuts, economic downturn, and increasing special education enrollment with associated mandated transportation requirements.

6. Consideration of Alternatives

a) Proposal to Strengthen Amendments

79. **Comment:** The uncertainties about future economic growth, the inability to enforce changes in the emission inventory, and the significant negative impacts to the most impacted communities argues for a more cautious approach that leaves no room for eroding the Board's commitment in the 2007 State Strategy. The rule amendments should focus on providing short-term economic relief over the next couple of years. Short term relief should not rollback requirements up to ten years or longer at the expense of public health benefits. The following proposed strengthened amendments would ensure long-term benefits.

(1) Proposal: Require all model year 1994-2000 heavy-duty vehicles with a GVWR of greater than 26,000 lbs to install PM filters by 2012, or upgrade to newer models. Allow all retrofitted vehicles eight years before compliance with 2010 standards:

Direct diesel PM emissions are responsible for the high cancer risks experienced by communities near truck traffic. Cost-effective particulate retrofits are widely available and have been proven a successful technology for these trucks. According to ARB estimates, model year 1994-2000 trucks emit 7 times more PM per mile than ones equipped with a particulate filter. Allowing retrofits an eight year life as in the current proposal would allow truck

owners to hold on to these vehicles, while providing benefits for impacted communities where some of the oldest trucks travel most.

(2) Proposal: Replace all heavy-duty vehicles more than 20 years old beginning in 2012.

The current proposal allows uncontrolled pre-1994 model year trucks to continue operating until 2015. A mandatory 20 year retirement age would remove the oldest vehicles from use, giving owners a choice to either retrofit or upgrade to a newer model year.

(3) Proposal: Require all trucks less than 26,000 pounds to retrofit, retire or upgrade to a newer vehicle at 15 years of age:

These trucks, delivery vehicles, tow trucks, and others operate primarily in high density, urban areas where exposure to diesel emissions is greatest. The proposal should be modified to begin retiring medium duty trucks at 15 years of age, while providing an option to retrofit to extend the life of the truck.

(4) Proposal: Preserve the original clean up requirements for all school buses, large and small (less than 26,000 pounds), with a commitment to ensure funding where necessary: (BWG1) (BWG2)

Agency Response: The commenter suggests several proposals to ensure continued emission benefits of the regulation. The following is a summary of each comment (identified through underlined text) and response:

Proposal 1: Require all model year 1994-2000 heavy-duty vehicles with a GVWR of greater than 26,000 lbs to install PM filters by 2012 and allow to operate for 8 years.

We do not agree with the commenter's proposal. Staff presented modifications to the compliance requirements and options for heavier trucks at the December 17, 2010 Hearing. The changes included modifications to the model year schedule, the addition of a delayed compliance option for construction trucks and a credit for the early addition of newer engines to the fleet. The net changes are not expected to result in a significant change in total emissions from the original staff proposal, but are expected to result in early addition of newer engines and lower compliance costs for construction truck owners.

While there is no PM retrofit requirement for trucks with 1994 and 1995 model year engines, as proposed by the commenter, these engines must be replaced by 2016. Trucks with 1994 and 1995 model year engines represent a smaller part of the emissions inventory because they are near the end of their useful lives and typically operate fewer miles than newer engines. If they were retrofitted by 2012 as proposed by the commenter and allowed to operate up to eight years, they would not be replaced by 2016 as required by the amended regulation. This means that although there would be more PM reductions from 2012 to 2016 from these engines, the benefits would also be partially offset from higher NOx emissions from 2016 to 2020 and would not be as health protective as it would initially appear.

The changes to the model year schedule for heavier trucks were made available for comment with the May 19, 2011 Notice of Availability of Modified Text. The modified schedule requires heavier trucks with 1996 and 1997 model year engines to be retrofit by January 1, 2012 and delays the PM filter requirement for 2000 model year engines by one year, until 2013. Consistent with the above comment, the schedule allows retrofitted vehicles to operate 8 years before being required to be replaced. The requirements for 1995 and older model year engines remained unchanged from the regulation that was made available with the December 2010 Notice of Public Hearing.

Proposal 2: Replace all heavy-duty vehicles more than 20 years old beginning in 2012.

While the alternative proposal would achieve additional emission reductions, the proposal to begin replacements by January, 1 2012 would increase the capital investments required for fleets with older equipment compared to both the existing regulation and the amended regulation and would require replacements with new vehicles rather than allowing used replacements to be a viable compliance option. Such a proposal is counter to the Board's goal of amendments that provide near term economic relief to on-road fleets.

Staff believes the most cost effective way to achieve the needed emissions reductions to meet federal requirements, to address localized risk and to proctect public health is to initially retrofit existing trucks that continue to have sufficient useful lives remaining and to phase-out older trucks with new ones in later years. Targeting PM filters on newer engines is a lower cost compliance strategy than replacing trucks. Immediate PM reductions are achieved equal to a vehicle replacement for a fraction of the cost (a new tractor trailer sleeper cab might cost $130,000 while a PM filter costs around $15,000 installed). This approach has the lowest compliance costs and considerably lower capital costs in the early years and provides more time for the economy to recover before replacements are required and makes used vehicle replacements to be a viable compliance option.

Proposal 3: Require all trucks less than 26,000 pounds to retrofit, retire or upgrade to a newer vehicle at 15 years of age.

Staff considered a number of options to achieve emissions reductions from trucks while seeking a strategy that would lower capital investments required and achieve the most cost-effective emissions reductions. We believe the amended regulation, which does not require lighter vehicles to install PM filters s but focuses on replacement of such vehicles at 20 years of service, achieves the appropriate balance between costs for affected fleets and emissions reductions needed to protect public health and meet federal air quality standards.

Overall emissions from light trucks represent less than 10 percent of the emissions inventory while emissions from the older light trucks targeted by the proposed alternative represent less than 2 percent of the inventory. The additional emissions reductions achieved by requiring PM filters on these older light trucks at 15 years would be about 2 percent of the total benefit achieved for all trucks with the regulation as amended. Considering this, the commenter's proposal would not be as cost-effective as reducing emissions from heavier trucks.

In the 2010 Staff Report, the overall cost effectiveness of the amended rule was $44.20 per pound of PM reduced. For comparison, staff estimated the cost effectiveness for a lighter truck with a level 3 PM filter and an analysis period of 5 years of operation. Five years represents the remaining useful life of the 15-year old vehicle. The cost effectiveness for the lighter truck is about $200 per pound of PM reduced because of the reduced 5-year useful life of the PM retrofit (compared to the 8 years allowed by the regulation) and because lighter trucks tend to operate fewer miles and have lower emissions per mile travelled. This makes the costs of this proposed alternative relatively high and the benefits rather small in comparison to the benefits from heavier trucks. The cost of replacement of the lighter truck at 15 instead of 20 years would be even higher than the cost of retrofitting and therefore the emissions reductions would be even less cost-effective than that estimated for retrofitting. Finally, the commenter's proposal would not be consistent with the Board's goal of improved cost-effectiveness for the amendments.

Proposal 4: Preserve the original clean up requirements for all school buses, large and small (less than 26,000 pounds), with a commitment to ensure funding where necessary.

Staff originally proposed to exempt diesel-fueled school buses under 26,001 lbs. GVWR from the amended regulation. However, the Board chose to include school buses greater than 14,000 lbs. GVWR in the amended regulation and directed staff to make necessary changes to preserve the requirements for smaller school buses, effectively accepting Proposal 4 as suggested by the commenters.

80. **Comment:** We suggest some amendments that we think would particularly help to reduce some of the localized impacts. For the on-road rule, require the '94 to 2000 vehicles to install PM filters in the next two years; replace all the vehicles more than 20 years old beginning in 2012 and require all the trucks under 26,000 pounds also retrofit, retire, or upgrade to a newer vehicle when they hit 15 years of age. (SCC)

Agency Response: The alternatives proposed in the above comment are similar to Proposals 1, 2 and 3 of Comment 79. See the response to Comment 79.

81. **Comment:** I come here to recommend that as we - or you - consider offering some economic relief to the small and large businesses, and that you don't forget about the communities that are also having to contend with an economic crisis, while having to contend with the negative impacts on their health caused by toxic diesel pollution, as Senator Polanco detailed earlier. In particular, East Yard EJ recommends that you require all 1994 to 2000 year heavy-duty vehicles to install these much needed filters by 2012. Waiting until 2017, as staff proposes, is inconceivable, given our communities are already overburdened with diesel pollution. (EYARD1)

Agency Response: The alternative proposed in the above comment is similar to Proposal 1 of Comment 79. See the response to Comment 79. Also, please see the

discussion of the benefits of the Truck and Bus regulation in the responses to Comments 18 to 35 on the public health impacts of exposure to diesel exhaust.

82. **Comment:** We also request that you replace all heavy-duty vehicles that are more than 20 years old beginning in 2012. We cannot allow for these uncontrolled pre-1994 model year trucks to continue to park near our schools, drive past our parks, and exhaust in our lungs. I ask that you consider the children and the communities that are most negatively impacted both by the economic crisis and also by these dirty businesses. (EYARD1)

Agency Response: The alternative proposed in the above comment is similar to Proposal 2 of Comment 79. See the response to Comment 79. Also, please see the discussion of the benefits of the Truck and Bus regulation in the responses to Comments 18 to 35 on the public health impacts of exposure to diesel exhaust.

b) Require Level 1 and Level 2 VDECS[9] on Lighter Trucks

83. **Comment:** We understand that retrofitting lighter, less expensive, vehicles (<26,000 lbs GVWR) with Level 3 retrofits may not be cost effective in all cases, however, in-order to capture some emission reductions of PM and other air toxics from the medium duty fleet, we believe ARB should incentivize installation of ARB or EPA verified Level 1 and Level 2 retrofits on these lighter trucks. These technologies provide a more economical, passive solution to achieving some emission reductions from this fleet of 140,000 vehicles in the state. (MECA1)

84. **Comment:** Incentivize installation of ARB or EPA verified Level 1 or Level 2 retrofits on under 26,000 pound trucks before turnover to provide additional reductions in toxic exhaust emissions from the medium duty fleet. (DFS1)

85. **Comment:** Incentivize program for less than 26,000 pound vehicles that would allow for Level 1 or 2 VDECS. (JMC1)

86. **Comment:** With respect to highway vehicles with Gross Vehicle Weights less than 26,000 lbs, we ask that ARB consider the installation of verified Level 1 diesel oxidation catalysts which can be supplied for less than $1000 per vehicle and will afford particulate emissions reductions of more than 25% and a significant reduction in unregulated toxics. This would seem to be a better option than simply eliminating all mandatory retrofit requirements. (CDT1)

Agency Response: Lighter trucks represent a smaller portion of the emissions inventory in comparison to heavier trucks, because lighter vehicles generally are replaced in shorter cycles, their population is smaller, they operate fairly low miles, and have lighter engines. The additional near term emissions reductions achieved by requiring PM filters on the light trucks prior to 2015 are small – about 2 percent of the total benefit achieved for all trucks with the regulation as amended. These additional

[9] Verified diesel emission control strategy. – a retrofit device that has been verified under ARB's Verification Procedure which ensures the effectiveness and durability of diesel engine retrofits.

emissions reductions are also not as cost effective as controlling emissions from heavier trucks. Lighter trucks also don't tend to be concentrated in localized areas such as distribution centers and don't pose as much of a local PM exposure risk as heavier vehicles. Further, the amended regulation requires the replacement of all light trucks starting in 2015, ultimately providing the maximum PM benefits – more than would be achieved under the commenter's proposal.

Staff investigated the cost effectiveness of requiring lower level verified devices to provide additional reductions in toxic exhaust emissions from lighter vehicles. In the 2010 Staff Report, the overall cost effectiveness in dollars for each pound of PM reduced was $44.20. For comparison, staff estimated the cost effectiveness for a lighter truck with a level 2 PM filter and that of a heavier truck with a level 3 PM filter. Both trucks are 10 years old and the analysis period is for 8 years of operation. The cost effectiveness for the lighter truck is about $120 per pound of PM reduced and for the heavier truck it is about $26 per pound of PM reduced. The typical heavier vehicle has higher emissions per mile and travels significantly more miles per year, so retrofitting a level 3 PM filter on a heavier truck is a substantially more cost effective way to achieve the same emissions reductions.

Using PM filters verified to a lower level, especially a Level 1 device (which achieves only a 25 percent reduction in PM emissions), does not provide many of the air quality benefits that would be achieved by using Level 3 devices or by vehicle replacement, regardless of the lower cost. For this reason, the staff did not recommend and the Board did not direct the use of Level 1 devices.

B. Summary of Comments and Agency Responses – Notice of Modified Text

The following comments were submitted during the 15-day comment period for the modifications to the originally proposed amendments.

a) Street Sweepers

87. **Comment:** Taken as a whole, the regulation already has the effect of a phased reduction of street sweepers and the corresponding unemployment of sweeper operators. Additionally, the price increases staff has suggested must be passed on to consumers has been met with property owners electing to cancel or reduce service. Streets and paved areas now not being swept or swept less frequently are contributing to the states air pollution problems. The forced reduction of California's private sweeper fleet is particularly disturbing as street sweepers actually pick up 10 to 1,000 times more PM than they produce, including both PM10 and PM2.5. If air quality is the goal then eliminating even the oldest, most polluting sweeper remains counterproductive. (NAPSA3)

88. **Comment:** The slow economic recovery has resulted in less work, employees on extended unemployment, and many property owners and or business owners reducing or canceling sweeping service. This only adds to the air pollution problem. As a service business, people have a choice as to whether or not they

choose to use the service. Passing on the price increases that staff has proposed, has not been received well by property owners. (CVS)

89. **Comment**: As the need to control emissions for street sweepers and other in-use diesel on-road vehicles has evolved, we feel (NAPSA) that the vital remediation role street sweepers play has been overlooked. Under the National Pollutant Discharge Elimination System (NPDES), street sweepers play the most important role under Best Management Practices (BMPs) to remove pollutants from streets and roadways that otherwise would enter our storm water systems, streams and rivers. Even with concessions and extensions given to our industry during the proposed changes there will be a large number of sweepers removed from service and not replaced. In fact, because of economic conditions, cities and counties have cut back on their sweeping programs which will directly lead to more pollutants entering our water systems. Private sweeping fleets will be downsized to meet the regulations and in many cases will not be able to retrofit or replace because of the high cost of replacement now nearing $250,000.00 each. Private fleets play a critical role to supplement sweeping operations not carried out by state, county, city and other government agencies. This will lead to additional pollutants entering our water systems.

    To summarize this issue, the CAL/EPA departments of Air and Water need to collaborate to maintain an adequate number of street sweepers needed to remediate the streets and roadways to protect air quality and water quality under the (NPDES) storm water system. (NAPSA1)

90. **Comment**: In regards to the most recent changes, CARB staff recognized that a slowing of economic activity, caused in part by this very regulation, resulted in lower emissions. Protecting and enhancing the environment is critical. In fact, "enhancing the environment" is a crucial part of the NAPSA Mission Statement. But regulating productive equipment that is fundamentally designed to remove pollutants from our air and water to the point that it is not able to be used will have the unintended result of actually hurting the environment and will further reduce economic activity as more small businesses succumb to economic failure.

    While NAPSA members outside of California theoretically will enjoy the purchase of quality, productive sweeper trucks from the California fleet at fair sale prices, the reduced trade-in value and forced retirement of productive equipment is already having a devastating effect on our California members. The reduced purchasing power and company shrinkage is also affecting our manufacturer members as well. (NAPSA2)

91. **Comment:** Removing street sweepers from the street, when they are the only weapon against re-entrainment is counter intuitive. The only logical assumption is that these harsh regulations are based more on opinion and emotion than science, economics or reason. Street sweepers remove millions of tons of air and water pollutants from our environment every year. Even the oldest, so called "dirty" sweepers (which are perfectly acceptable across the state line) remove more pollutants than they produce. Making it more difficult to achieve this environmental benefit defies logic. (NAPSA2)

Agency Response: Staff does not agree with the commenter that the economic impact of the regulation will result in reductions in sweeper service in the state, thereby resulting in increased entrained PM emissions. First, the amended regulation significantly lowers the compliance costs for all fleets and should allow sweeper fleets to meet the demand for services when the economy recovers. The overall reduction in compliance costs are expected to be comparable to most other fleets. Staff expects that in the first five years, the estimated costs of the regulation would be reduced by more than 50 percent statewide. For the life of the regulation, the overall cost would be reduced by about 60 percent on average. The costs to businesses that contract with sweeper operators is expected to be typically 1 to 2 percent of revenue and the costs to the consumer is not expected to be noticeable.

The actions an individual company would have to take to comply with the amended regulation will depend on factors such as the size of the fleet, the vehicle types, vehicle age, and normal vehicle replacement practices. From discussions with sweeper fleets and NAPSA representatives, we understand that on average, sweeper fleets have more light duty vehicles (those with a GVWR less than 26,001 lbs) than heavier vehicles. The amended regulation eliminates PM filter requirements for this lighter class of vehicles, delays the start of the replacement requirement to 2015, and limits replacements to engines that are 20 years old or older until 2020. After 2020 all vehicles need to be upgraded to 2010 model year engines. Therefore, most lighter street sweepers will be able to operate for a typical 20 year life and very few would need to be replaced earlier than normal. For most fleets, these reduced requirements will mean that the compliance costs attributable to the regulation for lighter sweepers will be eliminated.

For the remaining heavier vehicles in the fleet, all replacements can be delayed until 2020 or later with the PM filter phase-in option. At that time, 10 year old used replacement vehicles can be used to meet the final requirements and new vehicle replacements are not needed to comply. With the phase in option, from 2011 to 2016 fleets must meet PM filter requirements and are not required to make any replacements until January 1, 2020. In addition, no action is required until 2018 if PM filters are not available for an engine or cannot be safely installed.

The amended regulation as presented to the Board in December 2010 also has a downsizing credit for heavier vehicles over 26,000 lbs that delays the annual compliance requirements until January 1, 2016. This option can substantially delay compliance costs for fleets most affected by the recession and provides more time for the economy to recover. This credit was expanded for street sweepers in a new section 2025(n)(4) of the modified regulation that was made available for comments with the 15-day Notice of Availability of Modified Text. The change was made because street sweepers have a GVWR that is in a fairly narrow range above and below 26,000 lbs. This modification gives street sweeper owners more flexibility than other fleets in delaying compliance for heavier street sweepers when retiring lighter street sweepers.

In summary, the flexibility provided in the regulation and the reduced requirements and credits for fleets that have been more adversely affected by the economy significantly lowers the compliance costs and are not expected to have a negative effect on street sweeping services or entrained PM emissions.

APPENDIX A

Lists of Commenters

Table A-1

List of Persons and Entities whose Comments are Included in this Summary of Comments on Significant Environmental Issues Regarding the Amendments to the Truck and Bus Regulation

Reference Code	*Commenter*	*Company or Affiliation*
AKELL	Alan Kellogg	Alan Kellogg
ALAC1	Bonnie Holmes-Gen	American Lung Association of California
ALAC2	Bonnie Holmes-Gen	American Lung Association of California
BAAQMD1	Anthony Fournier	Bay Area Air Quality Management District
BAAQMD2	Jack Broadbent	Bay Area Air Quality Management District
BCA	Andy Katz	Breathe California
BHULZ	Brian Hulz	Brian Hulz
BWG1	Camille Kustin	Better World Group
BWG2	Camille Kustin	Better World Group
BWG3	Camille Kustin	Better World Group
CAPCOA	Mel Zeldin	California Air Pollution Control Officers Association
CASTO1	Michael Rea	California Association of School Transportation Officials
CASTO2	Michael Rea	California Association of School Transportation Officials
CCAIR1	Nidia Bautista	Coalition for Clean Air
CCAIR2	Elizabeth Jonasson	Coaltion for Clean Air
CCAIR3	Nidia Bautista	Coalition for Clean Air
CCDS	Betsy Reifsnider	Catholic Charities
CDT1	Kevin Brown	Clean Diesel Technologies, Inc.
CIOMA	Jay McKeeman	California Independent Oil Marketers Association
COEU	Eric Eisenhammer	Coalition of Energy Users
CRPE	Brent Newell	Center on Race, Poverty, and the Environment
CTTA1	Jeff Hunter	California Tow Truck Association
CVAQC	Catherine Garoupa	Central Valley Air Quality Coalition
CVS	Bill & Jo Ann Bawks	Central Valley Sweeping
DCC2	Skip Brown	Delta Construction Company Inc.
DFS1	Julian Imes	Donaldson Company, Inc.
DVON	David Vonasek	David Vonasek
EBARBO	Eddie Barbosa	Eddie Barbosa
EHC	Joy Williams	Environmental Health Coalition

Reference Code	*Commenter*	*Company or Affiliation*
ELKG	Jill Gayaldo	Elk Grove Unified School District
ENG	Assembly member Mike Eng	Assembly California Legislature
ENSTR	James Enstrom	University of California, Los Angeles
EWILL	Ebbeling William	Fresno-Madera Medical Society
EYARD2	Jocelyn Vivar	East Yard Communities for Environmental Justice
FMMS	Michelle Garcia	Fresno-Madera Medical Society
GPAY	Gary Pay	Gary Pay
GVUSD	Sarah Koligian	Golden Valley Unified School District
HCHUN	Helena Chung	Helena Chung
HNAP	Heidi Napier	Heidi Napier
HNCA	Jenny Bard	Health Network for Clean Air
JHOL	Jacque Holub	Jacque Holub
JMC1	Martin Lassen	Johnson Matthey Catalysts
JYOUNG	Justin Young	Justin Young
KCUT	John D. Clements	Kings County Unified Transportation
LFS	Laura Fultz Stout	Laura Fultz Stout
LOWEN	Hon. Bonnie Lowenthal	California Legislature
LUSD	Dave Norris	Lakeport Unified School District
MECA1	Rasto Brezny	Manufacturers of Emission Controls Association
MECA2	Dr. Joseph Kubsh	Manufacturers of Emission Controls Association
MHS2	Segun Balogun	Mandela High School
MHS5	Salvador Matteo	Mandela High School SLWBP
MPPSTA	Martin Ward	Mid-Placer Public Schools Transportation Agency
NAPSA1	Jay Wells	North American Power Sweeping Association
NAPSA2	Kevin Kroeger	North American Power Sweeper Association
NAPSA3	Mark Carter	North American Power Sweeper Association
NCTP	Ed Duffek	NorCal Tea Party
NRDC1	Diane Bailey	Natural Resources Defense Council
NRDC2	Diane Bailey	Natural Resources Defense Council
NRDC3	Morgan Wyenn	Natural Resources Defense Council
OUSD	Pamela McDonald	Orange Unified School District Transportation Dept.
PPIN	Pam Pinkston	Pam Pinkston
PUESD	Diane Cox	Pioneer Union Elementary School District

Reference Code	*Commenter*	*Company or Affiliation*
RAMP	Brandon Kitigawa	Region Asthma Management and Prevention Project
RHS1	Neli Gutierrez	Richmond High School
RHS2	Jessica Orozco	Richmond High School
RHS3	Victoria Ramirez	Richmond High School
RTOM	Rick Tomlinson	Rick Tomlinson
SCAQMD1	Barry Wallerstein	South Coast AQMD
SCAQMD3	Henry Hogo	South Coast AQMD
SCC	Bill Magavern	Sierra Club California
SCHAT	Scott Chatten	Scott Chatten
SES	Stephen Rhoads	Strategic Education Services
SFIN	Sandra Finch	Sandra Finch
SJV/SC1	Seyed Sadredim	San Joaquin Valley Air Pollution Control District
SSTAL	Susan Stalzer M.D.	Susan Stalzer M.D.
STC	Stephen Rhoads	School Transportation Coalition
SUHSD	Tom Carroll	Shasta Union High School District
TLT	Tony Luiz	T&L Trucking, L.L.C.
USEPA	Elizabeth Adams	U.S. Environmental Protection Agency
VCOOT	Victoria Coots	Victoria Coots
WCTA	Michael Rea	West County Transportation Agency
WEAT1	Robert Hassebrock	Weatheford

Table A-2

Signers[1] of Better World Group (BWG) Letter[2]

Signers	*Affiliation*
Camille Kustin	Better World Group
Bonnie Holmes-Gen	American Lung Association in California
Karen G. Pierce	Bayview Hunters Point Community Advocates
Andy Katz	Breathe California
Betsy Reifsnider	Catholic Charities of the Stockton Diocese
Christine G. Cordero	Center for Environmental Health
Brent Newell	Center on Race, Poverty & the Environment
Jesse N. Marquez	Coalition for a Safe Environment
Nidia Bautista	Coalition for Clean Air
Anna Yun Lee	Communities for a Better Environment
Giselle Fong	Communities for Clean Ports
Jocelyn Vivar	East Yard Communities for Environmental Justice
Joy Williams	Environmental Health Coalition
Sarah Sharpe	Fresno Metro Ministry
Gabrielle Weeks	Long Beach Coalition for a Safe Environment
Kevin D. Hamilton RRT, RCP	Medical Advocates for Health Air
Diane Bailey	Natural Resources Defense Council
Anne Kelsey Lamb	Regional Asthma Management and Prevention Community Action to Fight Asthma
Jill Ratner	Rose Foundation for Communities and the Environment
Bill Magavern	Sierra Club California
Don Anair	Union of Concerned Scientists
Brian Beveridge	West Oakland Environmental Indicators Project

[1] [List of signers identified in Comment 16 in the table titled "Comments posted to on-offroad10 that were presented during the Hearing" posted on the comments log for this rulemaking at http://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=on-offroad10]

[2] Also identified by commenters as the joint coalition letter.

Table A-3

Signers[1] of Health Network for Clean Air (HNCA) Letter

Signers	*Affiliation*
Bonnie Holmes-Gen, Senior Policy Director	American Lung Association in California
Kris Calvin, MA, Executive Director	American Academy of Pediatrics, California District
Andy Katz, MCP, Government Relations Director	Breathe California
Justin Malan, Executive Director	California Conference of Directors of Environmental Health
Veronica Ramirez, Research Associate	California Medical Association
Ruben Cantu, Program Director	California Pan-Ethnic Health Network
William W. Stringer, MD, President	California Thoracic Society
Anne Kelsey-Lamb, MPH, Director	Community Action to Fight Asthma (CAFA) Regional Asthma Management and Prevention (RAMP)
Jeremy Cantor, MPH	Healthy Places Coalition
Sean O'Brien, Interim Executive Director	Los Angeles County Medical Association
Robert Gould, MD, President, SF-Bay Area Chapter	Physicians for Social Responsibility
Manal Aboelata, MPH	Prevention Institute
Robin Salsburg, JD, Senior Staff Attorney	Public Health Law and Policy
Mary A. Pittman, DrPH, President and CEO	Public Health Institute
Shan Magnuson, Director	Sonoma County Asthma Coalition
Sonal Patel, MD, MS, Chief, Division of Allergy and Immunology	White Memorial Pediatric Medical Group

[1] [List of signers identified in Comment 147 in the table titled "Board Meeting Comments log" posted on the comments log for this rulemaking at http://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=on-offroad10]