State of California
AIR RESOURCES BOARD

Resolution 07-19

July 26, 2007

Agenda Item No.: 07-5-6

WHEREAS, section 39002 of the Health and Safety Code provides that the control of air pollution from vehicular sources, except as otherwise provided in Division 26 of the Health and Safety Code, shall be the responsibility of the Air Resources Board (ARB or Board);

WHEREAS, sections 39600 and 39601 of the Health and Safety Code authorize the Board to adopt standards, rules and regulations and to do such acts as may be necessary for the proper execution of the powers and duties granted to, and imposed upon, the Board by law;

WHEREAS, sections 39515 and 39516 of the Health and Safety Code provide that the Board may delegate any duty to the Executive Officer which the Board deems appropriate and that any power, duty, purpose, function, or jurisdiction which the Board may lawfully delegate shall be conclusively presumed to have been delegated to the Executive Officer unless the Board has expressly reserved such authority onto itself;

WHEREAS, section 41511 of the Health and Safety Code provides that for the purpose of carrying out its duties, ARB may adopt rules and regulations to require the owner or the operator of any pollution emission source to take such action as ARB may determine to be reasonable for the determination of the amount of emissions from such source;

WHEREAS, under section 39650 of the Health and Safety Code, the Legislature finds and declares that it is the public policy of the State that emissions of toxic air contaminants should be controlled to levels that prevent harm to the public health;

WHEREAS, pursuant to section 39662(b) of the Health and Safety Code, on August 27, 1998, the Board identified particulate matter (PM) emissions from diesel fueled engines (diesel PM) as a toxic air contaminant pursuant to article 3 (commencing with section 39650), chapter 3.5, part 2, division 26 of the Health and Safety Code;

WHEREAS, pursuant to section 39669.5(a) of the Health and Safety Code, the Office of Environmental Health Hazard Assessment has listed diesel PM and other compounds associated with diesel exhaust as possibly causing infants and children to be especially susceptible to illness;

WHEREAS, in identifying diesel PM matter as a toxic air contaminant, the Board determined, pursuant to section 39662(c) of the Health and Safety Code, that there is not sufficient scientific evidence to support identification of a threshold level below which no significant adverse health effects are anticipated; this is codified in title 17, California Code of Regulations (CCR), section 93000;

WHEREAS, pursuant to section 39665 of the Health and Safety Code, ARB staff prepared a comprehensive risk reduction plan (Diesel Risk Reduction Plan) to significantly reduce PM emissions from diesel-fueled engines and vehicles, which the Board approved on September 28, 2000;

WHEREAS, sections 39658, 39665, 39666, and 39667 of the Health and Safety Code authorize the Board to establish airborne toxic control measures (ATCM) for substances identified as toxic air contaminants in accordance with specified criteria;

WHEREAS, in fulfilling the requirements of the aforementioned sections set forth in the paragraph immediately above, and specifically section 39667 of the Health and Safety Code, the Board is required to consider adoption of an ATCM revising emission standards for vehicular sources to achieve the maximum possible reduction in public exposure based on its prior determination not to specify a threshold exposure level for diesel PM under section 39662 of the Health and Safety Code;

WHEREAS, an ATCM for a vehicular source, developed pursuant to section 39667 of the Health and Safety Code, is required to be based on application or utilization of the best available control technologies (BACT) or more effective control methods, unless the Board determines, based on an assessment of risk, that an alternative level of emission reduction is adequate or necessary to prevent an endangerment of public health;

WHEREAS, sections 39674, 39675, 42410, 43016, 43017, and 43023 of the Health and Safety Code authorize the Board to request that state and local prosecutors seek criminal prosecution, civil and administrative penalties, and injunctive relief for violations of adopted ARB regulations and ATCMs;

WHEREAS, in section 43000 of the Health and Safety Code, the Legislature has declared that the emissions of air pollutants, including oxides of nitrogen (NOx) and PM, from motor vehicles are the primary cause of air pollution in many parts of the State; also, the State has the responsibility to establish uniform procedures for compliance with standards which control or eliminate those air pollutants, vehicle emission standards apply to new and used motor vehicles equipped with motor vehicle pollution control devices;

WHEREAS, sections 43013(a) of the Health and Safety Code authorize the Board to adopt motor vehicle emission and in-use performance standards, which it finds to be necessary, cost-effective, and technologically feasible;

WHEREAS, section 43013(b) of the Health and Safety Code authorizes ARB, consistent with 43013(a), to adopt emission standards and regulations for light-, medium-, and heavy-duty vehicles and off-road engine categories;

WHEREAS, section 43018 of the Health and Safety Code further directs the Board to endeavor to achieve the maximum degree of emission reductions possible from vehicular and other mobile sources to accomplish the attainment of State ambient air quality standards by the earliest practicable date and to adopt standards and regulations that will result in the most cost-effective combination of control measures on all classes of motor vehicles;

WHEREAS, pursuant to definitions of vehicular source, motor vehicle, and vehicle respectively set forth in sections 39060, 39040, and 39059 of the Health and Safety Code in-use off-road diesel vehicles are vehicular sources that fall exclusively within the jurisdiction of ARB;

WHEREAS, under the federal Clean Air Act (CAA), the United States Environmental Protection Agency (U.S. EPA) has established National Ambient Air Quality Standards (standards or NAAQS) for pollutants considered harmful to public health, including fine particulate matter (PM2.5) and ozone, and states that exceed the NAAQS are required by federal law to develop State Implementation Plans describing how they will attain the standards by certain deadlines;

WHEREAS, many areas of California, including the South Coast and San Joaquin Valley air basins, are in non-attainment for ozone, for which NOx is a precursor, and both the South Coast and San Joaquin Valley Air Basins are in non-attainment for PM2.5, for which NOx and diesel PM are significant contributors;

WHEREAS, the federal CAA requires the South Coast and San Joaquin Valley air basins to attain the PM2.5 NAAQS by 2015 and U.S. EPA requires that all necessary emission reductions be achieved by 2014 and the same air basins, having the most severe ozone concentrations are expected to have until 2023 to attain the federal ozone standard;

WHEREAS, the ozone and PM2.5 SIPs are due to U.S. EPA by June 2007 and April 2008, respectively, and air quality modeling indicates that significant reductions of both NOx and diesel PM are crucial to meeting the two standards;

WHEREAS, ARB staff met and worked with affected private industry, federal, state, and local public agencies, and the public in developing these regulations, holding numerous meetings with individual affected stakeholders, thirteen public workshops, eight public workgroup meetings, and sending out over 688,000 mailings;

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

Rulemaking – Regulation for In-Use Off-Road Diesel Vehicles," released April 6, 2007 (ISOR) and an associated technical support document, entitled "Technical Support Document – Proposed Regulation for In-Use Off-Road Diesel Vehicles," also released April 6, 2007 (TSD);

WHEREAS, the ISOR and TSD identified and explained the need and appropriate degree of regulation for diesel PM that was earlier addressed in the Diesel Risk Reduction Plan required by Health and Safety Code section 39665(a) and addressed the need for further NOx reductions from in-use off-road diesel vehicles;

WHEREAS, the ISOR and TSD discussed, to the extent data were reasonably available, the factors specified in Health and Safety Code section 39665(b) in adopting the Diesel Risk Reduction Plan, including: estimates of emissions, exposure, and potential health effects due to the operation of diesel-fueled engines associated with in-use off-road diesel vehicles, feasible control options, potential environmental impacts, cost of compliance for all owners and/or operators of in-use off-road diesel vehicles, and cost impacts for ARB implementation of the proposed regulation;

WHEREAS, the ISOR presented staff's proposal that the Board adopt the proposed Regulation for In-Use Off-Road Diesel Vehicles, title 13, CCR, section 2449, as set forth in Attachment A to the ISOR, as modified by staff in its suggested changes to the initially proposed regulation, as set forth in Attachment B, which was presented to the Board at this hearing, both of which are attached hereto as Attachments A and B;

WHEREAS, staff concluded that the proposed regulation would reduce diesel PM and NOx emissions and associated cancer, premature mortality, and other adverse health effects statewide and significantly reduce such emissions and adverse health effects in California, and would prevent approximately 4,000 premature deaths;

WHEREAS, the emission reductions from the proposed regulation would be expected to provide a benefit of $18 to $26 billion in avoided premature death and health costs between 2009 and 2030;

WHEREAS, staff estimated the overall cost effectiveness associated with compliance with the proposed regulation to be approximately $41 per pound of diesel PM reduced and $2.30 per pound of NOx reduced;

WHEREAS, ARB has adopted emission standards for new off-road diesel engines, title 13, California Code of Regulations (CCR), section 2423, in December 2000 (Tiers 2 and 3) and October 2004 (Tier 4), which harmonized with emission standards adopted by U.S. for federal nonroad diesel engines;

WHEREAS, in March 2003, ARB adopted Verification Procedure Waranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines, title 13, CCR, section 2700-2710, and subsequently amended it in October 2004 and February 2007;

WHEREAS, in accordance with the authority set forth above, staff evaluated various control options, including:

Reliance on existing new engine standards and voluntary programs with no additional control of in-use off-road diesel vehicles;

Requiring fleets to install PM retrofits on all vehicles or replace them with new vehicles under a certain phase-in schedule;

Requiring that fleets meet a PM fleet average emission rate, but not a NOx fleet average emission rate;

Requiring fleets to meet stricter or less strict fleet average emission targets than those proposed; and

Requiring fleets to turn over a greater or lesser annual percentage or retrofit a greater or lesser annual percentage if meeting the BACT requirements in lieu of the fleet average targets than proposed.

WHEREAS, staff determined that the regulation would impose a non-reimbursable mandate on local governments, which comprise approximately three percent of California's in-use fleet;

WHEREAS, the California Environmental Quality Act (CEQA), section 21080.5 of the Public Resources Code and Board regulations at title 17, CCR, section 60006 require that no project that 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 section 11340), part 1, division 3, title 2 of the Government Code;

WHEREAS, after consideration of the ISOR, written comments, and public testimony it has received, the Board finds regarding the proposed adoption of section 2449 of title 13, CCR, that:

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

The proposed regulation is both technologically feasible and cost-effective, providing owners of in-use off-road diesel fleets with flexibility by allowing

them to choose among several compliance options to control emissions, reduce public exposure, and protect public health and safety;

The proposed regulation would achieve the necessary emission reductions in a cost-effective manner while providing fleet owners with reasonable compliance flexibility by, among other things:

On or after March 1, 2010, requiring owners of large in-use off-road diesel fleets to either meet the separate fleet average emission targets for NOx and diesel PM, or, alternatively, meet BACT requirements that include annual fixed percentage turnover (8 percent of a fleet's total maximum power annually through March 1, 2015 and 10 percent thereafter) for fleets that do not meet the NOx standard and annual fixed percentage retrofitting (20 percent of a fleet's total maximum power annually with the highest level of verified diesel emission control system (VDECS) available) for fleets that do not meet the diesel PM standard;

On or after March 1, 2013, allowing owners of medium in-use off-road diesel fleets to either meet the separate fleet average emission targets for NOx and diesel PM, or, alternatively, meet BACT requirements that include annual fixed percentage turnover (as stated above) for fleets that do not meet the NOx standard and annual fixed percentage retrofitting (as stated above) for fleets that do not meet the diesel PM standard;

On or after March 1, 2015, allowing owners of small in-use off-road diesel vehicle fleets to either meet the fleet average emission target for diesel PM, or, alternatively for fleets that do not meet the diesel PM standard, annually retrofit a fixed percentage (as stated above);

Prohibiting all fleets from adding vehicles with the dirtiest engines to their fleets beginning March 1, 2009, and prohibiting fleets that do not meet the fleet average targets from adding additional vehicles to the fleet that would further increase emissions above the fleet average targets;

Requiring after March 1, 2020 for large and medium fleets and March 1, 2025, for small fleets, that no vehicle may be added to a fleet unless it is a Tier 3 or interim or final Tier 4 engine with an original engine manufacturer (OEM) diesel particulate filter or a Level 3 VDECS installed within three months of acquisition;

Requiring, with limited exceptions, that no in-use off-road vehicles be allowed to idle for more than five consecutive minutes;

Allowing fleet owners to calculate the annual fleet averages for NOx and diesel PM using electric and alternative fueled vehicles and stationary and portable systems that replace diesel vehicles in the fleet;

Providing fleet owners with early BACT turnover and retrofit credits for early compliance and carryover credits for exceeding compliance schedules for a specific year;

Exempting the following vehicles from compliance with the BACT turnover requirements: vehicles less than 10 years old, specialty vehicles that meet specified criteria, vehicles retrofitted in the last six years with a Level 2 or 3 VDECS that was the highest level of VDECS available at the time of retrofit, vehicles with a interim or final Tier 4 engine, and (through March 1, 2013) all vehicles equipped with a Tier 1 or higher engines;

Exempting engines from compliance with the BACT retrofit requirements if they are less than five years old, no highest level of VDECS is available, they have been previously retrofitted with a Level 2 or 3 VDECS that was the highest level of VDECS available at the time of retrofit, or they were equipped with an OEM diesel particulate filter at the time the vehicle was purchased new;

Exempting from the fleet average and BACT requirements all vehicles used for emergency operations, vehicles that have been designated as low-use, dedicated snow removal vehicles, and vehicles used more than 50 percent of the time in agricultural operations;

Providing for compliance extensions in some circumstances, for example, if a fleet owner wants to use experimental diesel emission control strategies, or if he encounters unavailability of equipment, including VDECS and Tier 4 engines because of manufacturing delays;

To ensure expeditious implementation, compliance, and enforcement, requiring all fleet owners that operate in-use off-road diesel vehicles in California to:

Have a unique equipment identification number permanently affixed on the outside of each affected vehicle; and

Maintain records and report annually specified information to ARB;

The proposed regulation would reduce exposure to potential diesel PM and NOx emissions and associated cancer and other adverse health effects in all nearby communities where in-use off-road diesel vehicles operate;

The economic impacts of the proposed regulation have been analyzed as required by California law, and the conclusions and supporting documentation for this analysis are set forth in the ISOR and TSD;

The benefits of the proposed regulation to public health and the environment justify the costs of compliance, implementation, and enforcement; and

No alternatives considered or that have otherwise been identified and brought to the attention of ARB would be more effective carrying out the purpose for which the regulation is proposed, or would be as effective and less burdensome to the affected private businesses and public agencies than the proposed regulation;

WHEREAS, the Board further finds, in accordance with Health and Safety Code section 39650(e), that while absolute and undisputed scientific evidence may not be available to determine the exact risk from diesel PM from diesel-fueled engines associated with in-use off-road diesel vehicles, it is necessary to take action to protect public health and that the maximum feasible emission reductions permitted by law should be obtained;

WHEREAS, pursuant to Health and Safety Code section 39667, the Board further finds that the proposed in-use emission standards approved herein are based on utilization of BACT identified within the time scheduled for compliance;

WHEREAS, pursuant to section 43013(a) and (b) of the Health and Safety Code, the Board further finds that the in-use emission standards approved herein are necessary, cost-effective, and technologically feasible within the time provided for compliance;

WHEREAS, the Board further finds based on its independent judgment and analysis of the entire record before it that:

With respect to the requirements of CEQA, the proposed regulation will not have a significant adverse effect on the environment, but will result in the reduction of diesel PM and NOx; and

Having determined that the proposed regulation will not adversely affect the environment, but rather provide environmental benefits that are achieved both statewide and locally, the proposed regulation should not adversely impact any community in the State, especially low-income or minority communities; and

WHEREAS, section 209(e)(2) of the CAA requires that California request authorization from U.S. EPA prior to enforcing emission standards or other requirements relating to the control of emissions from new and in-use nonroad engines (of which off-road diesel engines are a subpart) not otherwise preempted by section 209(a) or (e)(1).

NOW, THEREFORE, BE IT RESOLVED that the Board hereby approves for adoption new sections 2449 et seq. of article 4.8, chapter 9, division 3, title 13, CCR, as set forth in Attachment A hereto, with the modifications set forth in Attachment B and the following additional modifications:

Divide the regulation presently set forth in section 2449, title 13, CCR into two separate sections: one covering the requirements for compliance with diesel PM limits and one for compliance with NOx limits;

Add a new section using incentive-based funding, consistent with the approach taken in Attachment C hereto – made available by staff at the hearing – that would allow any air quality management district and air pollution control district to achieve additional NOx reductions from in-use off-road heavy-duty diesel vehicles operating within its air basin by opting to follow the requirements of the section and providing incentive funding to fleets that would be required to apply for funds and, if received, use the funds to achieve real, calculable, and enforceable surplus NOx emission reductions;

Modify the definition of Non-Profit Training Center to refer to 26 U.S.C. subsections 501(a) and (c)(3), (5) and (6); and

Modify the regulations to provide that, on or after March 1, 2009, a fleet that permanently retires a Tier 0 vehicle from service within California may count that vehicle in meeting both the diesel PM BACT requirements and the NOx BACT requirements to achieve equivalent emission reductions relative to the retrofit requirements.

BE IT FURTHER RESOLVED that the Board directs the Executive Officer to incorporate into the proposed regulations the modifications approved herein, with such other conforming modifications as may be appropriate, and then to adopt the new regulations, after making the modified regulatory language available for public comment for a period of 15 days, provided that the Executive Officer shall consider such written comments regarding the modifications as may be submitted during this period, shall make further modifications as may be appropriate in light of the comments received, and shall present the regulations to the Board for further consideration if the Executive Officer determines that this is warranted.

BE IT FURTHER RESOLVED that the Board directs the Executive Officer to present reports to the Board as follows:

By January 2009, provide a technology update report on the status of diesel emission control strategies that have been verified by ARB and are available for installation to comply with the March 1, 2010 compliance date; the report shall include an update on the number of devices that have been verified, the cost of those devices, and information on the ARB/South Coast Air Quality Management District/Mobile Source Air Pollution Reduction Review Committee Off-Road Diesel Retrofit Showcase;

By December 2010, provide a status report on compliance with and enforcement of the March 1, 2010 compliance date for large fleets; the report shall include an

analysis of the effect of the flexibility provisions of the regulations and the regulation's economic impacts; and

By December 2013 and 2017, provide updates on compliance and enforcement that respectively cover the period March 1, 2010 through March 1, 2013 and March 1, 2013 through March 1, 2017, and updates on engine technology, including engine and vehicle manufacturer progress in having compliant Tier 4 engines and vehicles in the California market in the later years of regulatory implementation.

BE IT FURTHER RESOLVED that the Board hereby determines, in accordance with CAA section 209(e)(2), that to the extent the regulations approved herein affect nonroad vehicles or nonroad engines as defined in CAA section 216(10) and (11), the emission standards and other requirements related to the control of emissions in the regulations approved herein are, in the aggregate, at least as protective of public health and welfare as applicable federal standards, California needs its nonroad emission standards to meet compelling and extraordinary conditions, and the standards and accompanying enforcement procedures approved herein are consistent with CAA section 209.

BE IT FURTHER RESOLVED that the Board, pursuant to CAA section 209(e)(2) and the determinations set forth in the preceding paragraph, directs the Executive Officer to request that U.S. EPA grant California authorization to enforce the adopted regulations or confirm that all or parts of the adopted regulations fall within the scope of a previously granted authorization.

I hereby certify that the above is a true and correct copy of Resolution 07-19, as adopted by the Air Resources Board.

Lori Andreoni

Lori Andreoni, Clerk of the Board

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APR 04 2008
Resources Agency of California

Resolution 07-19

July 26, 2007

Identification of Attachments to the Board Resolution

Attachment A: Proposed Regulation for In-use Off-road Diesel Vehicles (division 3, chapter 9, article 4.8, section 2449, title 13, California Code of Regulations) as set forth in Appendix A to the Initial Statement of Reasons, released April 6, 2007.

Attachment B: Staff's Suggested Modifications to the Original Proposal distributed at the July 26, 2007 hearing.

Attachment C: Proposed Language to Be Added to New Article 4.8 – Requirement for Largest Fleets to Achieve Additional Reductions of Oxides of Nitrogen Under the Solicitation for Applications Program (ARB, 7/25/07), distributed by staff at the July 26, 2007 hearing.

State of California
Environmental Protection Agency
AIR RESOURCES BOARD

Notice of Decision and
Response to Significant Environmental Issues

Item:	**PUBLIC HEARING TO CONSIDER ADOPTION OF A REGULATION FOR IN-USE OFF-ROAD DIESEL VEHICLES**
Approved By:	Resolution 07-19
Adopted by:	Executive Order R-08-002
Agenda Item:	07-5-6
Public Hearing Date:	May 24, 2007 continued to July 26, 2007
Issuing Authority:	Air Resources Board (ARB)

The ARB has disclosed in Chapter 6 of the Staff Report: Initial Statement of Reasons (attached) and Chapter 9 of the Technical Support Document (attached) the potential impacts that the proposed regulation may have on public health and the environment. The ARB also identified both benefits and potentially adverse environmental impacts of compliance with the proposed regulation. ARB expects significant environmental benefits and does not anticipate any significant adverse public health or environmental impacts associated with the regulation.

Please refer to Attachment 2 to Executive Order R-08-002, entitled "ARB Staff Responses To Comments Raising Significant Environmental Issues Regarding the Proposed Regulation For In-Use Off-Road Diesel Vehicles" for comments received relating to environmental issues and ARB staff's responses. (Attached)

Certified: Trini Balcazar
Regulations Coordinator

Date: March 28, 2008

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APR 04 2008
Resources Agency of California

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

April 3, 2008

INTRODUCTION

This document is an attachment to Executive Order R-08-002, and written to compile responses to comments raising significant environmental impacts regarding the Proposed Regulation for In-Use Off-Road Diesel Vehicles. The following comments and responses are copied from the Final Statement of Reasons for the proposed regulation.

COMMENTS AND RESPONSES

Chapter III-A-3 Cost and Cost-Effectiveness

3)f)iii) Regulation Will Increase Cost of Infrastructure, Reducing and Delaying Infrastructure Projects

1. **Comment:** The demands to meet such hasty deadlines would not only put financial strain on the construction industry but substantially increase the cost of rebuilding efforts throughout CA. (HUFF)

2. **Comment:** An unintended consequence of this regulation is to cause a huge escalation in the cost of public works construction. (SHAWM1)

3. **Comment:** The prices for any work done in the state will have to go up at least two-fold, maybe higher. (CBC)

4. **Comment:** The proposed regulations will cause the cost of construction to double. (TURVEY)

5. **Comment:** This regulation will make the cost of the work rise and further pressure the budget of the agencies. (CDTOA1)

6. **Comment:** Are we trying to make new home, building, highway, infrastructure, remodeling, construction, landscaping, beach & parks, tree trimming etc the most expensive in the nation? (PB)

7. **Comment:** With this severe regulation, operation costs will be significantly higher, which means that bids will have to be higher, which means that the state will have to pay higher prices to complete work, including schools, hospitals, etc. Even with higher bids, the cost of

compliance with this regulation cannot be absorbed immediately. It will take many years to recover from the fiscal impact, if at all. (MSSE)

8. **Comment:** CARB is currently considering the adoption of off road diesel regulations that would have a negative impact on our company as well as California's infrastructure rebuilding efforts. (AGCA1) (ARTBA1) (ARTBA2) (DUVALL) (EDWARD) (FCICI2) (MALDONADO2) (MARGETT) (MCCULLOUGH) (MILLER) (MLD) (PBL) (SR) (VC&M)

9. **Comment:** I foresee a significant slowing in the construction industry. (J&M)

10. **Comment:** Who do you think will build the infrastructure that is needed for commerce in this state after you succeed in strangling the construction industry? You are completely out of touch with reality when it comes to the costs and practicality involved in this regulation. (GWE)

11. **Comment:** CARB is irresponsible if it makes the off road diesel regulation without a true understanding of the impact to the cost of private and public works construction. (SHAWM1)

12. **Comment:** Prices for our work will have to rise sharply to cover this projected capital expense. Our customers, cities in Southern California, will have to delay and reduce the amount of capital improvements because they will not be able to afford the prices we will have to charge. (WPC1)

13. **Comment:** Infrastructure rehabilitation will be severely retarded. (WPC2)

14. **Comment:** This regulation comes at an especially bad time what with the state planning to go on a highway building spree. (SLOCBE)

15. **Comment:** The regulation will reduce the number of pending public works projects. Additionally, costs incurred by contractors in meeting these requirements will be passed on to their clients, raising the price of bids to public agencies and increasing the costs of all public and private infrastructure projects in California. (EUCA1)

16. **Comment:** Construction equipment price hikes caused by the regulation, as well as the resulting consolidation of the construction industry, would serve to raise the overall costs of public infrastructure projects, thereby lowering the amount of these goods that can be purchased. That is, the regulation would directly result in fewer highways and schools being built, less affordable housing being constructed, and fewer repairs to the state's levee system. (CIAQC1)

17. **Comment:** If the regulation is implemented as presently drafted, it would have a profound, NEGATIVE impact on California's infrastructure rebuilding efforts. (PBL)

18. **Comment:** It is our opinion that the proposed rules will have a profound negative impact on the construction industry's ability to execute the State's work. (RJB2)

19. **Comment:** Another result of this proposed ruling is that projects are going to become much more costly. Our State is in dire need of much work. This regulation is going to make it much more difficult to do this work and at a much higher cost. Many projects simply will not get done and infrastructure will just get worse. The cost of not being able to improve our State infrastructure may be the highest cost of all. (HBE)

20. **Comment:** The regulation will mean more expensive roads, highways, bridges, schools, houses etc. The public coffers will not stretch nearly as far as they do today, and that will mean higher taxes to pay for the added costs. It will become a vicious circle with no end. (TERRELL1)

21. **Comment:** The industry does not have the infrastructure to support the regulation. It will freeze the states' ability to build, maintain and repair roads, provide emergency disaster relief, and help the commercial and public work force create the housing and industrial building necessary to provide this state with the infrastructure they need to bring in business. (WKC)

22. **Comment:** If implemented, the regulation would have a profoundly negative impact on our ability to stay in business. We're a small family-owned underground construction firm specializing in public works infrastructure rehabilitation. Infrastructure rehabilitation will be severely retarded. We'll have to charge more money for our work. (WPC3)

23. **Comment:** The regulation will produce immeasurable delays and costs to critical infrastructure and housing development projects. Now is not the time for the adoption of burdensome new regulations that will only serve to further slow the housing market, put a drag on the economy and disappoint California taxpayers who are anxious to see the infrastructure funding they approved last fall go to work in their communities today. (EDWARD) (GAINES)

24. **Comment:** Fewer contractors and higher construction costs mean fewer roads, schools, housing developments and levees. (PPC)

25. **Comment:** Without a new proposal, Californians risk seeing new ineffective regulations that prevent us from building the roads, schools,

housing and flood protection systems our state so desperately needs. (BECC)

26. **Comment:** I want to let the Board know that these regulations are not right for infrastructure rebuilding efforts. (DD)

27. **Comment:** The effect of these measures will be to reduce affordable housing; reduce the amount of purchasing power for state and local governments for infrastructure improvement, the reaping of huge profits by Halliburton type companies with the resources to plunder California's private and public coffers. (JOHNSON)

28. **Comment:** As a client of the construction industry, the City will face increased costs to implement public works projects, possibly affecting the schedule and overall cost-effectiveness of these construction projects. (LACITY)

Agency Response: We do not believe that the costs of the off-road regulation raise the costs of construction significantly or prevent or delay infrastructure developments in California. The cost of the regulation, while significant, is small compared to the annual amount spent on construction in the State each year. As described in Chapter XI of the Technical Support Document, even in the year of maximum cost, the regulation is expected to cost $568 million which is less than one percent of total annual construction valuation (~$60 billion). In most years, the cost is projected to be much less than this.

In addition, many new infrastructure and transportation bond measures were passed in November 2007, and are expected to stimulate infrastructure growth and improvement statewide. As stated in response in section 3)f)iv) in the FSOR, the costs of the off-road regulation are expected to reduce this bond money by less than one percent; this minimal impact is not expected to reduce the amount of construction funded by these bond measures.

Also, one stakeholder group solicited an independent review of the regulation, which included a discussion on a fleet's bonding capabilities. The review was conducted by Dr. Neil Eldin, Ph.D., Professional Engineer and is entitled "An Examination of the Construction Industry Compliance Costs for CARB's Off-Road Diesel Vehicle Rule." The review was submitted into the rulemaking docket for the in-use off-road diesel vehicle regulation during the May Board hearing, and is available on ARB's website as comment 21 presented during the Board hearing at www.arb.ca.gov/lispub/comm/bccommlog.php?listname=ordiesl07. Please see Dr. Eldin's review for a list of his professional experience and qualifications.

In Dr. Eldin's review, he states that as a general rule-of-thumb, the cost of heavy duty construction equipment is about 25 percent of the total cost of construction projects. Even a 50 percent increase in equipment cost would translate to only a

12.5 percent increase in typical project cost. Thus, the increased equipment costs imposed by the regulation are not expected to increase the overall costs of construction by a significant amount. Although it is expected that most of the compliance costs of the regulation will be passed through to customers, these costs are not expected to significantly raise the cost of construction. For a more detailed discussion on passing on costs, please see the response in section 3)e)vi) in this chapter of the FSOR. For information on the compliance costs of the regulation, please see the response in section 3)d)i) in the FSOR.

Commenter JOHNSON expressed concern that Halliburton type companies would plunder California's coffers. We assume by "Halliburton type" that the commenter means large out-of-state firms. The regulation applies equally to out-of-state firms as in-state, so we do not believe it gives such firms an advantage. If anything, the regulation is more strict for out-of-state firms because if they enter the state for the first time after the regulation is in effect, they must meet the fleet average requirements and do not have the option of meeting the BACT requirements.

Commenters CIAQC1 and PPC expressed concern that the regulation would reduce the number of contractors. Please see the responses in section 3)a)iv) in the FSOR for discussion of why ARB staff does not believe the regulation will significantly reduce the capacity of the construction industry.

3)f)iii)1) Shrinking fleets will lead to delays in projects

1. **Comment:** Any shrinkage in the industry will result in delays in thousands of public projects, all of which reduce emissions from congestion relief. Those added emissions dwarf the construction emissions from those improvements. Those impacts have not been included in CARB's analysis of the economic and environmental impacts of the regulation. (CIAQC7)

2. **Comment:** I fear that the regulation would compel many construction contractors to retire equipment long before the end of its useful life, costing workers their jobs and delaying the completion of essential infrastructure improvements. (CEI2)

Agency Response: Please see the responses in section 3)a)iv) in the FSOR for discussion of why ARB staff do not believe the regulation will significantly reduce the capacity of the construction industry. See the response immediately before this one for a discussion of why ARB staff do not believe the regulation will delay public construction projects.

For a discussion on job losses due to the regulation, see the responses in section 3)g) of the FSOR.

Please see also the response in section 6)k)ii) of Chapter III-A-6 of the FSOR for a discussion of how the regulation reduces the useful life of equipment and why this is necessary.

Please see ARB's response in section III-B of the FSOR regarding conjecture about delays causing adverse environmental impacts being speculative.

3)f)iii)2) The slowing of infrastructure projects will lead to emissions disbenefits.

1. **Comment:** This regulation is unreasonable because construction equipment is needed to build the infrastructure and buildings that will reduce car emissions, utilize renewable energy and conserve resources and will result in even dirtier air. (PCCA)

2. **Comment:** Creating regulations which are so costly that it restricts a company's ability to perform will delay many of the infrastructure construction projects so desperately needed in this state. Who will build the roads and bridges? Traffic congestion not only creates timely delays which impact person's lives, it also impacts the air quality from the effects of long term engine idling currently experienced on most California roadways. (CUSACK)

3. **Comment:** If this regulation proceeds as it is written, we sincerely believe it will undermine California's ability to make critical infrastructure improvements and will fail to deliver promised air quality benefits. (GC2)

Agency Response: We disagree. For the reasons discussed in the first response in section 3)f)iii), we do not believe the regulation will delay infrastructure projects. Therefore, we do not expect it will delay or impact projects intended to reduce traffic congestion or have other environmental benefits.

As discussed in Chapter IX of the Technical Support Document, staff estimates that with implementation of the regulation, diesel PM emissions will be reduced by about 4.6 tons per day (tpd) in 2015 and 5.2 tpd in 2020 relative to baseline levels. These reductions represent a 60 percent decrease in PM emissions in 2015 and a 74 percent decrease in 2020. Although traffic congestion also contributes to air pollution, the reductions from the off-road mobile source category are necessary to meet the required state commitments under the Statewide Implementation Plan in 2014.

Please see ARB's response in section III-B of the FSOR regarding conjecture about delays causing adverse environmental impacts being speculative.

3)f)iv) The regulation will affect infrastructure bonds, and will decrease the number of projects built with this money.

1. **Comment:** If we assume that most of the $13.5 billion in added costs are concentrated in the heavy and public construction subsectors, and we assume further that the construction authorized by this bond will be completed in the same 2009-2020 time frame, then this added spending will represent 17% of the affected construction in that time period. As a result, the regulation would represent an added cost of about $2.1 billion, thus reducing the effective spending for the bonds by 5%. The regulatory costs are likely to increase costs for the projects constructed through the bond measures authorized November 2006 by about $2.1 billion. This represents 5% of the authorized bond amounts. (CIAQC1)

2. **Comment:** The regulatory costs associated with compliance are likely to increase costs of the voter-approved infrastructure bond projects by about $2.1 billion. This represents 5 percent of the authorized bond amounts. This means fewer roads, schools, housing and levees will be built and the pace at which these projects can be completed will be significantly slowed. (MARGETT)

3. **Comment:** The CTC is in the process of approving nearly $8 billion in transportation projects approved by the voters last November and $12 billion more is in the pipeline. However, I am concerned that if these off-road diesel vehicle regulations are adopted as drafted, they would increase construction costs and reduce competition among companies bidding on projects. Both CARB and the industry have acknowledged that these regulations will increase the cost of construction. A recently released economic analysis indicates that these regulations are likely to increase costs for the projects constructed through the bond measures approved by the voters in November 2006 by about $2.1 billion. That amount is 5 percent of the authorized bond amounts! (CTC)

4. **Comment:** These regulations will cause construction contractors to either downsize or go out of business entirely – which means higher construction costs for projects and less construction jobs. It is estimated that these regulations will reduce infrastructure investment by $2.1 billion at a time when our state needs every dollar it can get toward rebuilding infrastructure systems. (FISHERL)

5. **Comment:** The rule in its current form will cause a 5 percent decrease in the buying power of the infrastructure bonds. (DUVALL)

6. **Comment:** The successful passage of Proposition 1B will generate close to $19.7 billion to fund transportation and air quality projects throughout the state. The first 4.5 billion was recently allocated by the California

Transportation Commission in the form of a list of 71 transportation projects aimed at relieving congestion and improving safety on our state highway system. One criterion these projects had to meet in order to receive project funding was near-term deliverability. But because the off-road diesel regulation targets the construction industry, if passed it will directly place these projects in jeopardy on their ability to stay on time and on budget. A coalition analysis demonstrated that regulations would increase costs for infrastructure bond projects by 5 percent. So here's some new cost examples to statewide transportation projects if the currently proposed regulation is passed: In Los Angeles, an additional 47 million will be needed to complete the construction of the Route 405 carpool lanes; in San Diego, an additional 22 million to build the new managed lanes on Intestate 15; in the Bay Area, close do 21 million more to construct a fourth bore at the Caldecott Tunnel; and in the Sacramento region, more than 16 million in new money to build the Lincoln Bypass. The big picture price tag has the potential to increase overall costs for the infrastructure bonds by 2.1 billion. (QUAN)

7. **Comment:** Construction equipment price hikes caused by the regulation, as well as the resulting consolidation of the construction industry, would serve to raise the overall costs of public infrastructure projects, thereby lowering the amount of these goods that can be purchased. That is, the regulation would directly result in fewer highways and schools being built, less affordable housing being constructed, and fewer repairs to the state's levee system. If the bond spending is spread over the 2009-2020 period, construction spending will increase about 4%. The estimated added regulatory costs over that period are $9.7 billion. Assuming the bonds incur an equal proportion of these costs, $400 million of the bonds will be spent on compliance costs, reducing the effective spending for the bonds by 1%. (AGCA3) (CIAQC6)

8. **Comment:** The regulation will negatively impact the $40 billion REBUILD CALIFORNIA bond program. In addition to driving up contractors costs and bid prices, the reduction in the number of bidders / will drive up project costs. Fewer contractors will also mean reduced capacity to perform the work and a delay in the issuance of contracts. The Bond dollars will fund fewer projects than originally planned. (CIAQC7)

9. **Comment:** Our economic analysis concludes that the state-wide fleet could shrink by as much as 30,000 pieces of equipment. A reduced fleet will limit the size and type of contracts that companies can bid on and will reduce the bonding capacity of those firms to do additional work. The regulation will have a dramatic effect on the cost of construction contracts just as California launches the $40 billion rebuilding bond issue effort approved by the voters in November 2006. (CIAQC8)

10. **Comment:** These rules will also significantly reduce the buying power of the historic $43 billion infrastructure bonds the people of California approved last November. Due to the enormous expense of replacing this equipment – in some cases more than $1 million for each machine – the cost of construction projects will likely increase. This means fewer roads, schools, housing and levees will be built and the pace at which these projects can be completed will be significantly slowed. (ARTBA1) (ARTBA2) (FCICI2) (MALDONADO2) (MCCULLOUGH) (MCQUEEN1) (MCQUEEN2) (MILLER) (PPC) (SCOTTR) (SR) (VC&M)

11. **Comment:** The rule would increase the time required to make critical improvements to the state's infrastructure, including the improvements that the people of California approved last November 2006, when they approved $43 billion in infrastructure bonds. The construction industry would need more time to perform such a great volume of work, and congestion and other problems would therefore linger. In addition, as time passed, and the cost of labor, material and other inputs continued to increase, the number and scope of the improvements that such bonds could finance would gradually but steadily decline. In the end, there would be fewer and smaller improvements to roads, schools, levees and the like. (AGCA3)

12. **Comment:** The priority purpose of Proposition 1B was to improve air quality through relief of traffic congestion, funding of transit, and measures to reduce emissions from goods movement activity. This regulation will come into play probably in exactly the wrong time in terms of when the Proposition 1B moneys are being ramped up, when equipment is needed, when contractors are needed. There seems to be a pretty uniform consensus within the transportation community that adequate technology and equipment resources for retrofit are not likely to be there within the next two years. If that happens and equipment is pulled out and contractors are forced to pull back from projects, there are a lot of projects that will benefit air quality that will be undermined and delayed. (JEFFE)

13. **Comment:** Now is not the time for the adoption of burdensome new regulations that will only serve to further slow the housing market, put a drag on the economy and disappoint California taxpayers who are anxious to see the infrastructure funding they approved last fall go to work in their communities today. CARB is running the risk of creating overnight a huge shortage of equipment needed to build a variety of infrastructure, including projects funded under last years infrastructure financing package as contained in prop 1B-1E. (GAINES) (EDWARD)

14. **Comment:** Proposition 1B through 1E calls for significantly improving our infrastructure but the mandated acquisition of the required equipment may cause taxpayers delays and cost overruns in the hundreds of millions of

dollars. Is there a fiscal analysis given the passage of those ballot measures? (ASA)

15. **Comment:** The voters of California recently approved the spending of billions of dollars over the next few years to repair California's badly decayed infrastructure. Who is going to do that work if CARB drives the cost of those projects up or drives the contractors out of business? (EUCA)

16. **Comment:** The program will put contractors out of business (or at least severely reduce their ability to perform) during a time when Governor Schwarzenegger's Go-California Team is promoting the ICE (Industry Capacity Expansion) Program to handle the large upcoming amount of highway work. (DCCI)

17. **Comment:** The off-road diesel regulations will have a profound, negative impact on our company, on many of our employees and on the Governor's laudable infrastructure bond projects. (TCS)

18. **Comment:** To meet CARB's objectives in such a short time-frame will cause an enormous impact to the state's economy and the multi-billion dollar bond initiatives passed last November. It will also drive many contractors out of business entirely. (CRS) (MAY) (NNC)

19. **Comment:** Are we trying to minimize the payoff of recent voter passed construction bonds making the cost of "Rebuilding California" out of site? Is this mandate really what California's voters want? (PB)

20. **Comment:** How are we going to attack these new state infrastructure bonds, and how are we going to go after that work when we can't use our equipment? (COAT)

21. **Comment:** California has worked too hard to shore up and fund much needed bond measures to rebuild California. Passage of this regulation will contravene the will of the voters. Instead of building roads, parks, schools, and hospitals, contractors will be forced to replace the cornerstone of their business; their equipment. (JJAI)

22. **Comment:** As drafted, the regulations would have devastating impacts on construction, mining, and other affected industries and government agencies. The cost of converting equipment to meet the regulation, the lack of available technology, and the aggressive schedule for implementation would likely have severe and unmanageable economic impacts. These regulations would only compound the massive infrastructure issues the state is currently facing and delay vital public

works projects funded by the infrastructure bonds passed by the voters last November. (OCBC)

23. **Comment:** Because of this rule, we will see an absolute decline in the fleet numbers. This decline will cost the state dearly in lost competition for the bond projects and all other critical work. (SCCA3)

Agency Response: We do not believe that costs of the off-road regulation will have a significant effect on infrastructure bonds. If the regulation costs are accurately estimated and properly allotted to the portion of the construction industry that performs public infrastructure work, ARB staff estimates that less than one percent of the value of the infrastructure bonds would be affected by the regulation. This small less than one percent effect will most likely not slow or decrease infrastructure projects funded through the infrastructure bonds.

A number of commenters above (including CIAQC1, MARGETT, CTC, FISHERL, DUVALL, and QUAN) cite a concern that the regulation would reduce the effective value of the infrastructure bond money by five percent, or by about $2 billion (out of $40 billion). The commenters are repeating a finding released by the consultant M Cubed as part of an analysis M Cubed performed for the stakeholder group, the Construction Industry Air Quality Coalition (CIAQC). We believe the M Cubed finding is inaccurate, as described further below. While it is unclear how M Cubed reached its finding, as the documentation for its analysis was not provided in its report, we believe M Cubed assumed that the full cost of the regulation (using its estimated cost of the regulation of $13.5 billion) was concentrated exclusively in the public construction sector. However, data from the Department of Finance shows that of total statewide construction value, more than 60 percent of which is in the residential (not public) sector. If such is the case, it was inappropriate M Cubed to assume that the cost of the regulation would only affect construction in the public sector which represents less than half of the statewide construction value. Additionally, as presented in Chapter V of the TSD, construction represents only half of the industries affected by the regulation; other industries such as the mining and airline industries make up the remaining 50 percent. The infrastructure bonds will not affect many industries outside of public construction, and ARB believes that is not correct to assume that the regulation costs of non-construction industry vehicles will affect the infrastructure bond money. In addition, staff believes the $13.5 billion regulation cost calculated by M Cubed is incorrect, and that their cost is based on assumptions used to artificially inflate the costs of compliance; ARB staff estimates the cost of the off-road regulation to be $3.0 billion to $3.4 billion. A more detailed discussion of why we believe the M Cubed cost analysis greatly overstates regulation costs is located in section 3)c) of the FSOR. As stated, if the regulation costs are properly allotted to just that portion of the construction industry that performs public infrastructure work, ARB estimates that less than one percent of the value of the infrastructure bonds would be affected by the

regulation. This small less than one percent effect will most likely not slow or decrease infrastructure projects funded through the infrastructure bonds.

A more detailed discussion on the effects of the regulation on infrastructure costs is located in section 3)f)iii) of the FSOR.

Commenter JEFFE raised a concern regarding retrofit availability. For a discussion of retrofit availability, please see the responses in section 2(a) of Chapter III-A-2 of the FSOR.

Commenter DCCI raised a concern that the regulation would put contractors out of business. Please see the responses in section 3)a) of this chapter of this FSOR for a discussion of why we believe the regulation will be affordable.

Commenter COAT raised a concern that the regulation would prevent a fleet from using its equipment. The regulation does not ban the use of any vehicles. Instead, it forces fleets to gradually retrofit and accelerate turnover to higher tier vehicles.

Commenter OCBC raised a concern regarding lack of available technology. As discussed further in the responses in Chapter III-A-2 of the FSOR, we believe adequate technology will be available to meet the regulation's requirements.

Commenter SCCA3 raised a concern regarding an absolute decline in fleet numbers. We do not believe the regulation will cause reduced capacity in the construction industry in California, as discussed further in the response in section 3)a)iv of the FSOR.

Chapter III-A-7 Greenhouse Gas Impacts

7)a) Regulation should assess CO_2 emissions change

1. **Comment:** Greenhouse gas issues were not considered. (CIAQC7)

2. **Comment:** The added fuel consumption from electrical regeneration of VDECS and due to VDECS will result in an industry wide increase in greenhouse gas contributions. (CIAQC7)

3. **Comment:** The reduction in black carbon, NOx, and CO2 emissions will reduce global warming. (UCS1)

4. **Comment:** The impact of the regulation on CO2 emission should be assessed. (CBIA)

5. **Comment:** An opportunity to achieve further greenhouse gas reductions does exist from this rule, especially for airport ground support equipment

(GSE). The current proposal gives additional credit for using zero emission vehicles (ZEV) in place of diesel powered equipment, but does not require it. While the potential GHG reductions would have been relatively small from an airport GSE ZEV requirement, there is sufficient technology availability for this type of requirement. (UCS1)

Agency Response: As discussed in the Chapter VI of the Staff Report, although some actions required by the regulation would slightly increase carbon dioxide (CO_2) greenhouse gas emissions because they have a fuel economy penalty impact on fleets, the regulation reduces black carbon emissions, which contribute to global warming. Also, the regulation reduces unnecessary idling and gives credit for the use of electric vehicles; both actions would reduce greenhouse gas emissions. Thus, on the whole, staff expects the regulation to have a negligible effect on global warming.

As discussed in Chapter IX of the Technical Support Document (TSD), it is difficult at this time to estimate the impacts of reductions of these pollutants on climate change. The U.S. EPA did not estimate climate-associated benefits for the new Tier 4 standards for nonroad diesel engines since there is no global warming potential yet assigned to black carbon as there are for gases such as carbon dioxide, methane, and nitrous oxide. The U.S. EPA also stated that it would be important to characterize all of the effects of the rule on climate, including tropospheric ozone and fuel economy, but the methods to conduct such an assessment are not available.

7)b) Address Global Warming First

1. **Comment:** Delay the regulation until such time that all pollution problems, including global warming, can be addressed. The regulation will need o be revamped later to address global warming. (MCNALLY)

Agency Response: As discussed in the response immediately prior to this one, staff expects the regulation to result in a negligible effect on global warming. As discussed in Chapter III-A-1 of the FSOR the need for this regulation to address NOx PM2.5 and the risks associated with diesel PM is immediate, and for that reason the regulation should not be delayed.

2. **Comment:** We believe there is additional untapped potential for reducing GHGs from off-road equipment, and the evaluation of GHG reduction opportunities was not an integral part of the rule development process. We support that the focus of this measure is achieving health benefits through reduction for NOx and PM emissions, and development started well before the passage of AB 32. However, future regulation or those currently under development should include analysis of technology and operational strategies specifically directed to achieve GHG reduction and

GHG reduction measures should be included in the regulatory requirement of each measure when feasible. (UCS1)

Agency Response: As the commenter noted, staff did not evaluate GHG reduction opportunities during the development of this rule. Therefore, staff cannot ascertain the economic or technical feasibility of reducing GHGs from off-road equipment.

Now that Assembly Bill (AB) 32 has been adopted directing ARB to address greenhouse gas emissions, the ARB will consider GHG emission impacts and opportunities to reduce GHGs in future regulation.

Chapter III-A-8 Consideration of Alternatives

8)a) Staff did not consider enough alternatives, thoroughly enough

1. **Comment:** Alternatives were not really considered: AGC challenges the... alternatives analysis of ARB's proposed standard. ARB's ISOR Section XI describes the alternatives to the regulation that ARB considered and why they were rejected in favor of the proposed regulation. AGC maintains that ARB has failed to consider a variety of less costly and reasonable alternatives to its proposal that would improve air quality in California. (PILCONIS) (AGCA3)

2. **Comment:** Have you done any research into what is available as an alternative to this plan? There is a diesel catalytic converter that has been invented that completely cleans the exhaust and with a minimum of expense to the small owner/operator. BUT BIG business would not make as much money with that. (EVANS1)

Agency Response: We disagree that ARB did not consider a wide variety of alternatives when developing the regulation. We seriously considered numerous alternatives during the three-year development of the regulation, and thoroughly analyzed potential alternatives' effect on emissions reductions and cost.

The Technical Support Document (TSD) for the regulation in Chapter X: Alternatives Considered describes five alternatives to the regulation that were considered, and the reasons staff did not recommend these alternatives. As described in the TSD, the alternatives considered ranged from taking no action, and allowing natural turnover and manufacturer requirements to reduce emissions, to increasing required turnover prior to 2015. The TSD description is intended to provide an overview of the alternatives considered, but is not intended to provide an exhaustive list of every possible change to the regulation considered and analyzed by the staff.

During the development of the regulation, staff considered and debated hundreds of potential changes to the regulation, including dozens of different potential versions of the fleet average targets. During the thirteen public workshops and eight workgroup meetings that were held throughout the state during regulation development, staff presented versions of regulatory concepts and regulatory language. After each set of workgroups or workshops, staff went back and modified the proposal based on the feedback received. So, each successive iteration of the regulatory concepts and language provided to stakeholders for review and comment was, in effect, an alternative presented for future consideration, even though it was not specifically identified as such in Chapter X of the TSD. Table III-A-8a-1 below lists workgroups and workshops at which versions of regulatory concepts and regulatory language were vetted.

Table III-A-8a-1 Public Meetings at which In-Use Off-road Diesel Vehicle Regulation Regulatory Concepts or Language Were Presented

Date	Alternative Development
Nov. 16 and 17, 2004	Preliminary concepts and approaches to off-road diesel equipment regulation presented http://www.arb.ca.gov/msprog/ordiesel/presentations/nov16-04_workshop_color.pdf
July 13 and 19, 2005	Initial regulatory concepts presented - Best Available Control Technology alternative presented http://www.arb.ca.gov/msprog/ordiesel/presentations/workshop_presentation07_13.pdf
August 30, 2005	Update on regulatory concepts presented http://www.arb.ca.gov/msprog/ordiesel/documents/wkgroup_agenda8-30-05.pdf
Jan. 24 and 31, 2006	Third public presentation of regulatory concepts, including Fleet Average Path alternative http://www.arb.ca.gov/msprog/ordiesel/documents/OffrdWkshopPresn01-06.pdf
July 21, 2006	Fourth public presentation of alternatives and revisions to regulatory concepts, including lower limits on maximum required equipment turnover, lighter regulation on low use vehicle provisions, and delayed compliance dates for smaller and medium fleets. http://www.arb.ca.gov/msprog/ordiesel/documents/july_21_workgroup_mtng_presentation.pdf
Dec 18, 20, and 21, 2006	Fifth public discussion and presentation of regulatory development, including proposed regulatory language, and proposed reporting requirements. http://www.arb.ca.gov/msprog/ordiesel/documents/OffRoad_06-1215_Full.pdf
Feb 20, 23, 26, and March 1,	Sixth public presentation of proposals, including revisions and alternatives to exemptions, vehicles used out of state, and carryover credit for vehicle turnover.

2007	http://www.arb.ca.gov/msprog/ordiesel/documents/07-0220_Workshop_4pp.pdf

Because of the volume of possible changes considered, it was not possible or desirable to present every possible alternative to the regulation in the TSD Chapter X description.

In addition, chapter II-A-8 of the FSOR discusses many of the alternatives proposed by affected fleet owners in detail, including the Associated General Contractors of America proposal, the Air Transportation Association of America proposal, the Coalition to Build a Cleaner California alternative, the initial South Coast Alternative Plan, and numerous alternatives and amendments suggested by individual fleet owners.

ARB recognizes that many fleet owners would prefer a less stringent regulation in order to lower costs, but does not believe that the rejection of an alternative that would have lowered the emissions reduction benefits of the final regulation implies that the alternative was not considered. It bears mention that ARB also considered and rejected alternatives that would have made the regulation more stringent, but at a cost it believed would outstrip a general fleet's ability to absorb and pass on costs. See response to the South Coast Alternative Plan in chapter 11-A-8 in the FSOR.

Chapter III-A-12 Emissions Benefits

12)d) Move dirty equipment out of state

1. **Comment:** Moving dirtier equipment (Tier 0, Tier 1 and Tier 2) out of state does not solve the problem. It is a short term solution to an overall global problem, and implies that while the emissions go down in California, they will increase by some commensurate amount elsewhere. The improvement to air quality globally will not materialize. A lot more could be accomplished by implementation of a clean up program rather than a replacement program. (LEWISM2) (WATKINSON) (FOSTER) (MCDONALD) (BCL) (HCC) (ESCOBEDO) (CEI3) (CUSACK) (BUCKANTZ)

2. **Comment:** Staff has not prepared an analysis that shows what proportion of California's fleet is likely to be sold out of state, nor what portion of other states' fleets will be retained for a longer period as a result of this rule. Without this analysis, it is difficult to determine the extent to which staff has over estimated the expected health benefits from the proposed rule. (LEWISM2)

3. **Comment:** Sending old equipment to another state is unreasonable. (FOSTER)

Agency Response: The air quality problems facing California are, in most ways, unique to the state. No other state in the nation has as many people exposed to unhealthy air quality. California is home to seven of the ten regions in the country with the poorest air quality. California is also the only state in the nation facing significant challenges in meeting the 2014 PM2.5 federal ambient air quality standard. As such, dramatic actions are required now to protect the health and welfare of the citizens of the state.

In developing the regulation, staff understood that one effect would be to shift older vehicles out of California and attract newer, cleaner vehicles to California. This was done so such that fleets would not have to scrap otherwise useful older vehicles. LEWISM2 is correct in that we did not quantify the public health impact of the regulation in other states. However, it is important to note that such an evaluation is not required under California law, and that ARB's authorities do not extend beyond California's borders. But, in granting ARB its regulatory authorities, the California Legislature clearly intended that the purpose of developing toxic air and mobile source control measures is to improve the health and the environmental conditions affecting the people in the state of California. In addition, under the federal Clean Air Act, California, because of the significant air quality challenges it faces, is alone among states in its ability to establish emission standards for new and in-use off-road vehicles and engines

For the following reasons, we do not agree with the commenter that the net effect of the regulation will be to simply move the problem from one location to another:

- We expect that the regulation will require installation of over 100,000 verified diesel emission control systems. These systems, such as diesel particulate filters, capture and destroy pollution before it is emitted to the air. VDECS do not simply move pollution from one geographic location to another.
- California has a dense population compared to many areas of the country. If relatively dirty vehicles are shifted out of California toward areas with lower population density, the associated pollution will affect less people and therefore, will still result in a net benefit to public health.
- California also has unique climatic and geographic conditions particularly suited to the formation of air pollution and therefore has a higher percentage of areas in the country that exceed National Ambient Air Quality Standards than any other state. Although California has only 12 percent of the country's population, 22 percent of the people living in 8-hour ozone nonattainment areas and 20 percent of people living in PM2.5 non-attainment areas live in California. Fifteen areas throughout the state, including South Coast Air Basin, the San Joaquin Valley, the Sacramento region, San Diego, Ventura and a number of air districts downwind of the urban areas, are currently in violation of the national ozone ambient air quality standards (AAQS). In addition South Coast Air Basin and the San Joaquin Valley, do not meet the national PM 2.5 AAQS. Therefore,

pollutants such as NOx that lead to the formation of ozone and fine particulate matter are of greater concern in California than in other states. If relatively dirty vehicles are shifted out of California to areas that attain the National Ambient Air Quality Standards and where the climate and atmospheric chemistry are not as conducive to formation of ozone and fine particulate matter, there will still be a net benefit to public health.

Chapter III-A-20 Other

20)c) Prohibit Dumping Old Equipment in Rural Counties

1. **Comment:** Provisions should be included in the regulation to preclude equipment "dumping" in rural areas as some fleet owners seek to sell their dirty units to unsuspecting rural operators. (SVBAPCC)

Agency Response: We disagree that further provisions should be added to restrict the sale of used vehicles in rural areas. The regulation already contains provisions in section 2449(j) that require disclosure of the applicability of the regulation to the buyer of a vehicle. Any person selling a vehicle with an engine subject to this regulation in California must provide the following disclosure in writing to the buyer on the bill of sale:

> When operated in California, any off-road diesel vehicle may be subject to the California Air Resources Board In-Use Off-road Diesel Vehicle Regulation. It therefore could be subject to retrofit or accelerated turnover requirements to reduce emissions of air pollutants. For more information, please visit the California Air Resources Board website at http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm.

In addition, in certain rural areas (such as ozone and PM2.5 3attainment areas), while the regulation does not require fleets to take actions, such as turnover, repower or retire their vehicles, to reduce their NOx emissions, it does require that these vehicles be retrofit with the highest level VDECS available. As such, even if older vehicles are sold into rural areas from urban areas, the health impacts (such as mortality and cancer risk) of such sales will not be significant.

In all cases, outreach to fleet owners in both rural and urban areas is important to educating all affected parties, including potential buyers of vehicles, of the requirements of the regulation. During the development of the regulation, staff conducted many workgroup meetings and workshops, met with numerous fleet operators (many in rural areas of the state) and sent out hundreds of thousands of mailings to potentially affected parties. Chapter III of the Technical Support Document provides more detail regarding the outreach efforts. Staff will continue such outreach during implementation of the regulation to make as many people aware of the regulation as possible.

20)f) Rule will cause people to buy new, rather than used

1. **Comment**: Rule will cause people to buy new, rather than used. Buying new rather than "recycling" is environmentally destructive. (CDTOA1)

2. **Comment:** There are foreseeable environmental consequences associated with regulations. Premature retirement of otherwise functional equipment will force businesses to dispose of that equipment, potentially creating environmental problems. The manufacture of new equipment to replace currently functioning equipment is also not without environmental consequences. It takes a tremendous amount of energy and natural resources to manufacture heavy equipment and deliver it to an end user. (BCL)

Agency Response: We acknowledge that one option for complying with the NOx provisions of the regulation is upgrading to new vehicles. However, others option are to buy newer, used vehicles or to apply NOx VDECS. As discussed at further length in the responses in section 3)f)i) in Chapter III-A-3 of the FSOR, we expect most fleets will choose the option of upgrading to newer, used vehicles, and the regulation will increase the demand for newer, used vehicles, but will not significantly affect the demand for new vehicles. Encouraging the use of newer, used vehicles is not environmentally destructive, but instead is a form of reusing resources, which is environmentally beneficial.

Chapter III-B First 15-day Comments

4)a) Greenhouse gas impacts

1. **Comment:** ARB underestimated the greenhouse gas emission increases that will occur due to the regulation. I estimate the overall greenhouse emission impact of the ORD regulation to be an increase of 394,040 metric tones per year of CO2 emissions in the year 2020. A significant portion of the impact derives from the manufacturer of the machine parts, transporting the machines, and manufacturing the urea for the SCR systems. These emissions occur whether or not the machine is even being operated. My results are summarized in Figures 1 and 2 below. (JOSEPH)

   (Note: The entire comment is included as Appendix A to the FSOR)

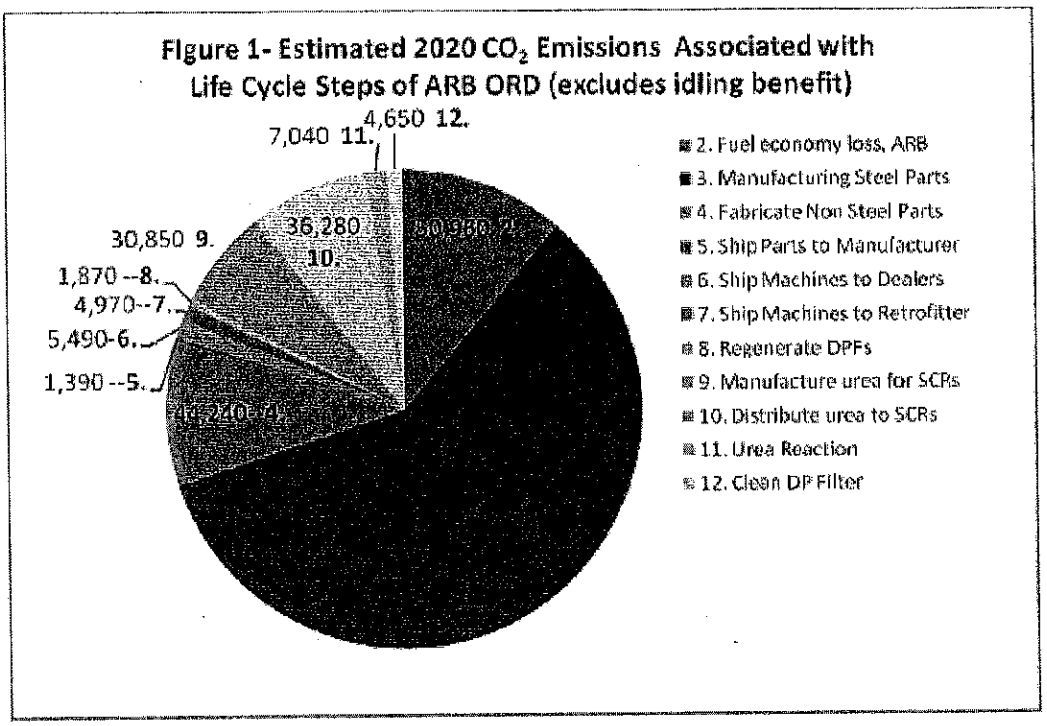


Figure 1- Estimated 2020 CO_2 Emissions Associated with Life Cycle Steps of ARB ORD (excludes idling benefit)
7,040 11.
4,650 12.
30,850 9.
36,280 10.
1,870 --8.
4,970--7.
5,490-6.
1,390 --5.
2. Fuel economy loss, ARB
3. Manufacturing Steel Parts
4. Fabricate Non Steel Parts
5. Ship Parts to Manufacturer
6. Ship Machines to Dealers
7. Ship Machines to Retrofitter
8. Regenerate DPFs
9. Manufacture urea for SCRs
10. Distribute urea to SCRs
11. Urea Reaction
12. Clean DPF Filter

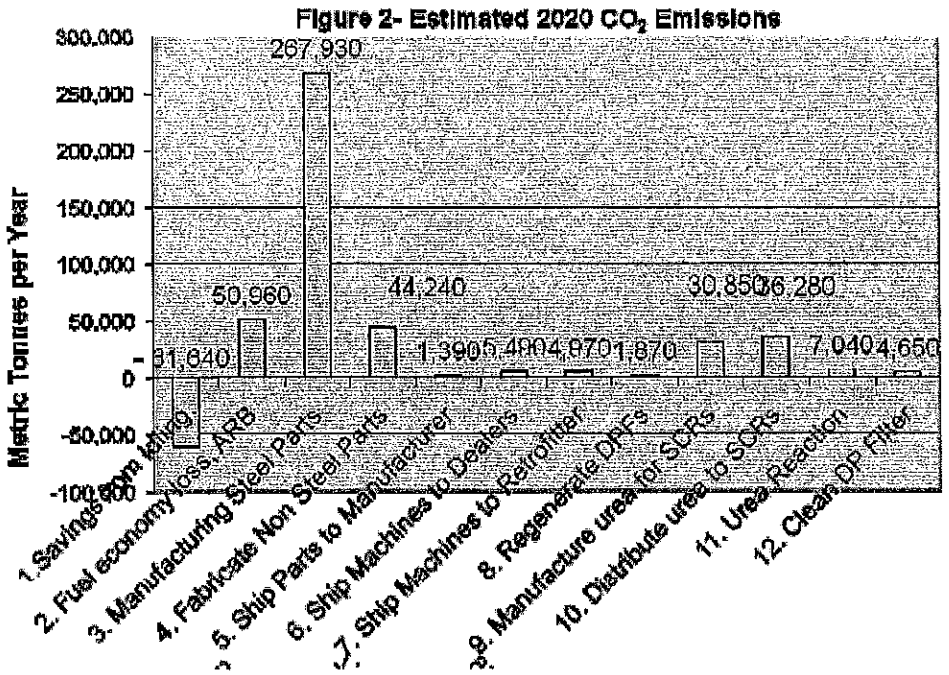


Figure 2- Estimated 2020 CO_2 Emissions
Metric Tonnes per Year
300,000
250,000
200,000
150,000
100,000
50,000
0
-50,000
-100,000
267,930
50,960
44,240
30,850
36,280
31,640
1,390
5,490
4,970
1,870
7,040
4,650
1. Savings from idling
2. Fuel economy loss- ARB
3. Manufacturing Steel Parts
4. Fabricate Non Steel Parts
5. Ship Parts to Manufacturer
6. Ship Machines to Dealers
7. Ship Machines to Retrofitter
8. Regenerate DPFs
9. Manufacture urea for SCRs
10. Distribute urea to SCRs
11. Urea Reaction
12. Clean DP Filter

Agency Response: The commenter's analysis is founded upon incorrect assumptions and therefore comes to incorrect conclusions. The largest mistakes in the commenter's analysis are (1) a large overestimate of the amount of new vehicles that must be purchased to comply with the regulation, and (2) a large overestimate of the use of selective catalytic reduction devices. These two mistakes lead to a huge inflation in greenhouse gas emissions, and – when corrected- the commenter's analysis becomes consistent with ARB staff's. Therefore, ARB staff stands behind the original conclusion of its greenhouse gas analysis, as described in Section VI.C of the Staff Report, i.e., we expect the regulation to have a negligible effect on global warming.

The commenter incorrectly assumed:

- An incremental increase of new vehicles purchased due to the regulation of approximately 37.5 percent of the statewide fleet, and
- All aftertreatment systems are designed for both PM and NOx reduction, meaning they have both diesel particulate filters and selective catalytic reduction devices.

The first assumption is based upon the work of M Cubed. The M Cubed "chain of transactions that net to the purchase of a new piece equipment" methodology incorrectly assumes that California is a closed model; i.e., vehicles in California will never leave or enter the national or world market. This assumption directly contradicts testimony from Ritchie Brothers, one of the largest auction houses selling off-road vehicles, at the July 26, 2007, Board meeting, in which Ritchie Brothers stated that off-road vehicles are traded nationwide and worldwide. M Cubed cites the "need to do the analysis not from the perspective of a single firm, as the Staff has done, but rather by tracing transactions involving a single vehicle. Only this way can it be determined when a vehicle actually leaves the fleet." However, California represents only 11 percent of the national equipment market, and to assume that no vehicles enter or exit the state, is incorrect.

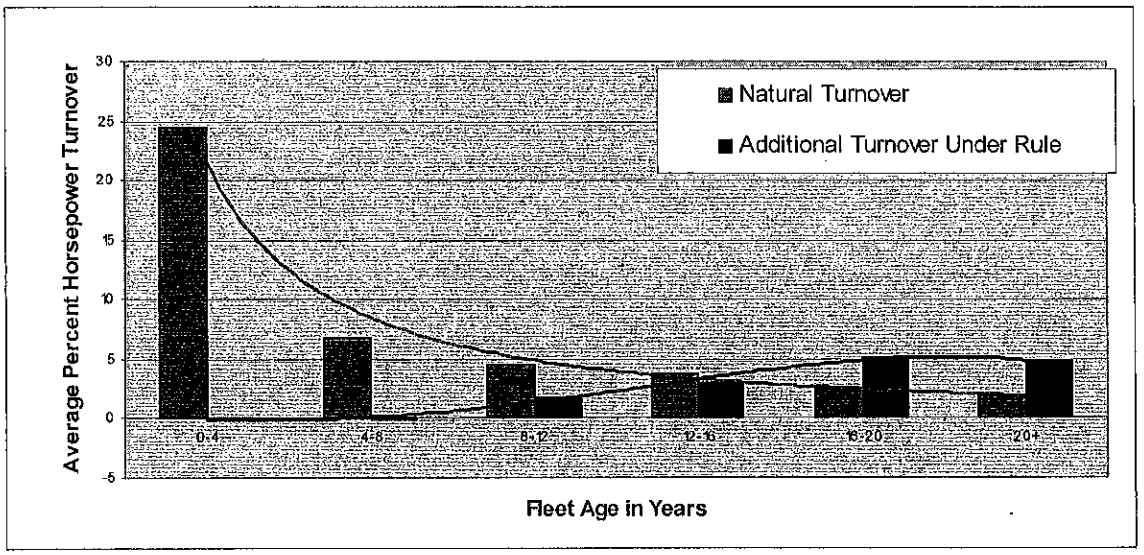
The flawed "chain of transactions" method implicitly assumes that the increased turnover activity due to the regulation among the various aged fleets is equal; i.e., older fleets would not experience an incremental turnover any greater than a new fleet and that, "This net turnover rate represents new equipment additions to the statewide fleet..." This is incorrect.

The regulation would impose upon different fleets different increments of increased turnover depending upon the average age of the fleet. Utilizing data from 200 fleets actually operating in California, staff modeled the turnover these fleets would incur to comply with the regulation from 2010 through 2020. Based upon this model, staff have estimated the natural turnover rate for the 200 fleets in the absence of the regulation and also estimated the average turnover rate for the 200 fleets when complying with the regulation.

As shown in Figure III-B-4a-1, newer fleets of zero to eight years that already have a high rate of vehicle turnover will not need do any additional turnover under the regulation. On the other hand, to comply with the regulation, older fleets 16 years and older will need to do significantly more turnover than they normally do.

As modeled by staff, under the regulation, the majority of new vehicles entering the statewide fleet would be purchased in the course of normal business by the very youngest, cleaner fleets. Staff modeling showed that fleets from zero to eight years of age would not incur any incremental increase in turnover or retrofit due to the regulation; all of the new vehicles purchased by these fleets would be purchased in the normal course of business (therefore the cost of these new vehicles is not attributable to the regulation).

Figure III-B-4a-1 Percent Turnover By Fleet Age



As discussed in the Appendix H of the Technical Support Document, staff modeled fleets of zero to eight years of age purchasing new vehicles, fleets of eight to twelve years of age purchasing one-year-old used vehicles; 12 to 16 year old fleets purchasing used 2-year-old vehicles, 16 to 20 year old fleets purchasing used 3-year-old vehicles, and 20 year old and greater fleets purchasing used 4-year-old vehicles.

As logic would dictate, under the regulation, the older, dirtier fleets will have a greater incremental increase in turnover and retrofit than the newer, cleaner fleets. Thus, in the staff models the incremental increase of one-year-old vehicles is greater than the incremental increase of new vehicles, and the incremental increase of two-year-old vehicles is greater than the incremental increase of one-year-old vehicles, and so on.

The M Cubed "chain of transactions" is unable to capture the differing incremental increase in turnover and retrofit of various age fleets

Table III-B-4a-1, provides the same data (rounded) as Figure III-B-4a-1 in tabular form. It also includes the percent average regulation turnover through 2020, percent of total statewide horsepower that the fleet average age bin represents and the replacement vehicle age.

As modeled, staff estimated that there would be little or no additional demand for new vehicles resulting from the regulation, but there would be a significant increase in demand for relatively new, used vehicles. Staff recognizes that older fleets may choose to buy new vehicles rather than their more typical practice of purchasing used vehicles and this would represent an increase demand for new vehicles; but, newer fleets may choose to purchase used vehicles. On average, staff believes that older fleets faced with the requirement to turn over additional vehicles would choose the least-cost option of buying slightly newer, cleaner, used vehicles.

Table III-B-4a-1

	Percent Natural Turnover	Percent Average Regulation Turnover Through 2020	Additional Turnover Under Regulation	Percent of Total Statewide Horsepower	Replacement Vehicle Age Modeled
0-4	24	24	0	1	0
4-8	7	7	0	16	0
8-12	5	6	2	34	1
12-16	4	7	3	28	2
16-20	3	8	5	17	3
20+	2	7	5	4	4

Thus, the net result of the regulation would be to cause little or no increase in demand for new vehicles but instead would be to cause an increase demand for out-of-state used vehicles as this will likely be the least-costly option for fleet owners to comply with the regulation.

Thus the commenter's emissions calculated in steps 3 (manufacturing steel parts), 4 (fabricating non-steel parts), 5 (shipping parts to manufacturer), and 6 (shipping machines to dealers) are incorrect and should be, within a certain range of uncertainty, zero.

The commenter's second and third assumptions are very unlikely and inconsistent with staff estimates. The commenter assumes, "Approximately 100 percent of the off-road fleet operating in 2020 will have aftertreatment devices... All aftertreatment systems are designed for both PM and NOx reduction meaning

they have both diesel particulate filters and selective catalytic reduction (SCR) devices."

Currently, the ARB verification process for aftertreatment devices is primarily based solely upon verifiable reductions in PM; NOx may or may not be reduced, and in most cases, is not.

Staff modeled various percent of vehicles with SCR up to a maximum of five percent as discussed in Chapter XI of the Technical Support Document; but in the final analysis concluded that it was unnecessary to model any SCR to meet the NOx fleet average targets (not including any that engine manufacturers may include in Tier 4 engines).

In 2020, staff estimated that after complying with the regulation there would still be 41 percent non-Tier 4 engines in the statewide fleet. As modeled, all of these non-Tier 4 engines would eventually be retrofitted, but none would have SCR. From a fleet owner perspective, fleet owners will likely avoid the expense and inconvenience of SCR if they can comply with the regulation without it.

Of the 18 Level 3 VDECS currently verified by the ARB (this includes on-road, off-road, and stationary applications) only three are verified as reducing NOx. There is the Longview which integrates a NOx reduction catalyst and catalyzed wall-flow silicon carbide diesel particulate filter. This provides simultaneous reduction of NOx, PM, hydrocarbon (HC) and carbon monoxide (CO) from one system. And there are the EGR Technologies LLC/CleanAIR Systems and the Johnson Matthey EGRT both of which use exhaust gas recirculation technology to reduce NOx. None of the currently verified Level 3 VDECS that reduce NOx use SCR.

At this time, it is unclear what strategy engine manufacturers will use to meet Tier 4 NOx standards. Some may use SCR, and some may not. Regardless, since, as described above, the regulation is not expected to significantly increase the demand for new vehicles, any SCR systems in new Tier 4 vehicles would have been there even in the absence of the regulation. Overall, it appears that the commenter has greatly overestimated the greenhouse gas emissions in steps 9 (manufacture urea for SCR), 10 (distribute urea for SCR), and 11 (urea reaction). Thus the commenter's emissions calculated in steps 9, 10, and 11 are uncertain at best and likely far less than estimated.

Staff has not analyzed the remaining steps provided by the commenter other than to note that the GHG emissions from the remaining steps are approximately zero.

Regardless, as discussed in the Chapter VI of the Staff Report and Chapter IX of the TSD, the regulation will reduce black carbon emissions, which contribute to global warming. It is difficult at this time to estimate the impacts of reductions of

these pollutants on climate change. The U.S. EPA did not estimate climate-associated benefits for the new Tier 4 standards for nonroad diesel engines since there is no global warming potential yet assigned to black carbon as there are for gases such as carbon dioxide, methane, and nitrous oxide. The U.S. EPA also stated that it would be important to characterize all of the effects of the regulation on climate, including tropospheric ozone and fuel economy, but the methods to conduct such an assessment are not available.

In conclusion, we believe the JOSEPH comment's greenhouse gas analysis is deeply flawed and greatly overstates the greenhouse gas increases due to the regulation. We believe the original conclusion of our greenhouse gas analysis - a negligible effect on global warming from the regulation - as described in Section VI.C of the Staff Report and documented further in the Section IX.D. of the TSD, is valid.

5)a) Weekend Effect

1. **Comment:** Although virtually ignored by ARB, credible data suggest that reducing NOx does not appreciably reduce ambient ozone concentrations and may even increase ambient ozone concentrations. As reported in the August 29, 2007, edition of *Inside EPA,* Dr. Douglas Lawson of the U.S. Department of Energy's National Renewable Energy Laboratory summarized the findings of his recent research as follows:

   I am not opposed to reducing NOx but I am opposed to doing stupid things. We've spent billions to reduce ozone, and it is either not reducing or increasing in many parts of the country....Emission control regimes on the books... place more emphasis on NOx cuts than on hydrocarbons and that means ozone may get worse. It has increased in Denver and Dallas and has been flat [in Los Angeles].

   According to recent research by Dr. Lawson and earlier research from 2003, lower weekend traffic and congestion make weekend NOx levels lower than weekday NOx levels. Today's weekend levels are comparable to the weekday levels that we will achieve after implementation of currently planned and adopted future NOx controls, such as the ORD rule. Perhaps counter intuitively, lower weekend NOx levels do not lead to decreased weekend ozone levels, but instead to ozone levels that are actually higher than during the week. These and related papers by eminent scholars support the contention that NOx reductions will result in higher ozone levels in California's urban areas. Quite simply, it is counterproductive for ARB to consider this unprecedented rule without certainty that it will benefit air quality in California. Even if the ORD rule does not increase ozone concentrations in California, ARB's environmental documents must consider the weekend-weekday phenomenon's lesser suggestion that NOx controls will not reduce ozone

levels as much as predicted in the absence of that phenomenon. (JOSEPH)

Agency Response: We disagree that the weekend effect findings mentioned by the commenter indicate that the regulation should be changed in any way.

First, the regulation contains provisions aimed at reducing diesel PM and NOx. The weekend effect is irrelevant to the diesel PM provisions because it concerns only NOx. As described further below, the latest modeling conducted by scientists at ARB indicates that very large reductions in NOx are needed to reach attainment of the health-based federal ambient air quality standards for ozone and final particulate matter (PM2.5). This supports the need to maintain the provisions in the regulation aimed at reducing NOx emissions.

Although we recognize the weekend effect (ambient ozone increases due to NOx quenching) can occur locally in some situations, to have any hope of attaining the ozone standard in the South Coast and San Joaquin Valley, large reductions of NOx are needed. There would be no way to reach attainment without reductions in NOx of 80 to 90 percent. Currently, the South Coast Air Quality Management District (SCAQMD) and the San Joaquin Valley Air Pollution Control District (SJVAPCD) have submitted to U.S. EPA SIPs which demonstrate attainment of the federal 8-hour ozone standard by 2024. To attain the federal ozone standard, NOx reductions of nearly 90 percent (from 2006 levels) are needed in the SCAQMD, while NOx reductions of about 80 percent are needed in the SJVAPCD.

For the most recent round of State Implementation Plans developed by ARB for the South Coast and San Joaquin Valley, using the most recent emission inventory available, ARB staff modelers ran various combinations of NOx and volatile organic compound (VOC) emissions reductions. The combinations generated a data set of predicted ozone levels as a function of percentage reductions of anthropogenic NOx and VOC emissions. The data was plotted as carrying capacity diagrams, which shows the level of emissions that the atmosphere can "carry" and still demonstrate attainment. Planners looked at the combinations of VOC and NOx percentage reductions that are needed to attain the standard and then developed a corresponding control strategy.

Carrying capacity diagrams also indicate qualitatively whether a strategy of reducing only VOC emissions, a NOx-only strategy, or a combination strategy is needed to achieve the national ambient air quality standards. When the lines on the diagrams are more horizontal, this indicates that more NOx control is needed. When they are more vertical, a control strategy requires more VOC control. Some carrying capacity diagrams for areas with large emission reduction needs for attainment (such as Arvin in the San Joaquin Valley) show lines that are curved in the upper right hand portion of the plots. This indicates VOC control would be advantageous in the beginning years of the control program. Further

down on the same plot, the lines are flat, indicating that VOC reductions do not reduce ozone further, while NOx reductions do. For such areas, a combination strategy in the early years of control will reduce ozone fastest. Thereafter, the areas must rely fully on NOx controls for attainment.

In our modeling, for both ozone and PM2.5, we took in to consideration the interactions between precursor emissions in ozone and fine particulate formation not just on weekdays, but also on weekends. For ozone, we modeled several episodes, and these included both weekdays and weekends. For PM2.5, we modeled an entire year. So the need for NOx and VOC reductions, at the levels determined by modeling, took into account the weekend effect.

Finally, even if the NOx reductions were not beneficial in reducing ambient ozone concentrations (which, as described above, we do not concede), because NOx reacts in the atmosphere to form nitrate particles, they are needed to reduce ambient PM2.5 concentrations.

8)b) Violates California Environmental Quality Act (CEQA)

1. **Comment:** Under the California Environmental Quality Act ("CEQA"), whether a rule has a significant, non-mitigable and adverse effect on the environment goes to whether the lead agency must prepare an Environmental Impact Report ("EIR"), or may simply make a negative declaration. With all due respect, AGC maintains that ARB cannot justify its suggestion that the off-road rule will not have such an effect. In addition, because ARB's Initial and Final Statements of Reason under the California Administrative Procedure Act ("APA") also serve as its environmental documents under CEQA, the distinction between an EIR and a negative declaration is less relevant here: ARB must still prepare its APA-required documents for its certified regulatory program, whether or not there is a significant, non-mitigable, and adverse effect on the environment. The ORD rule will have a significant and adverse impact on the environment even if, in the aggregate, it also has benefits for certain locations or certain pollutants. (JOSEPH)

2. **Comment:** Although certified-program status exempts ARB from Chapters 3 and 4 of CEQA and from Public Resources Code §21167, *Sierra Club v. State Bd. Of Forestry,* 7 Cal.4th 1215, 1231 (1994), it must comply with the non-exempted portions of CEQA, *Sierra Club v. State Board of Forestry* (1994) 7 Cal.4th 1215, 123, and "must demonstrate strict compliance with its certified regulatory program." *Mountain Lion Foundation v. Fish & Game Comm'n,* 16 Cal.4th 105, 132. (JOSEPH)

Agency Response: Despite the commenter's suggestion that under CEQA, ARB must prepare an EIR or make a negative declaration, it properly recognizes that ARB regulations are part of a certified regulatory program under Public

Resources Code § 21080.5. The California Resources Agency has certified ARB's regulatory programs; accordingly, ARB is not required to prepare either an EIR or a negative declaration. (Title 14, CCR, §§ 15250 and 15251.) Rather the detailed Initial Statement of Reasons/Staff Report, Technical Support Document (TSD), and responses in this FSOR, serve in place of the EIR/negative declaration. (Title 14, CCR, §§ 15002(l) and 15252.) Those documents address the anticipated environmental impacts from this regulation, and ARB has determined that the regulation will cause no reasonably foreseeable environmental harm. (See Staff Report, chapter VI, and TSD, chapter XI.) Having found that the regulation will not cause any foreseeable harm, but rather result in environmental benefits for the State, ARB was not under an obligation to do any further analysis of reasonably foreseeable mitigation measures or alternative means of compliance with the regulation. (Cf. *Mountain Lion Foundation v. Fish & Game Comm'n*, 16 Cal.4th 105, 134 ["the Commission did not satisfy the program's directive to assess feasible project alternatives and mitigation measures. The Commission's review procedures prohibit the Commission from adopting proposed regulations "if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impact which the activity may have on the environment..." (Emphasis added.] Having conducted a diligent environmental analysis in the Staff Report and TSD, having fully addressed all environmental issues raised in this FSOR and having filed a notice of final action and written response to significant environmental issues raised with the Secretary of the Resources Agency, ARB has fully fulfilled it responsibilities under CEQA. (Title 14, CCR, § 15252 and title 17 CCR §§ 60005-60007.)

3. **Comment:** As explained in prior AGCA and other industry comments, the off-road rule will constrict the sizes and thus capabilities of individual California construction company fleets. For example, when existing used equipment loses some of its resale value and the off-road rule requires companies to purchase newer equipment, those twin factors will compel many companies to downsize their fleets. Downsized fleets, in turn, either cannot bid on projects or will take longer to complete the same project with less equipment. Individual projects that take longer will thus cause more automobile idling, more congestion, and more related worker trips to the area. Further, shrinking a company's fleet (*e.g.*, going from two scrapers to one scraper) will create discrete project delays, thereby increasing the time to complete essential infrastructure and other important projects (*e.g.*, restoring and repairing highways and bridges to relieve transportation congestion).

   Recognizing that the most significant cause of traffic congestion is roadway bottlenecks, the off-road rule will lead to increased levels of transportation-related pollutants such NOx, PM, and volatile organic compounds because vehicles caught in stop-and-go traffic emit far more of these pollutants than they do operating without frequent braking and

acceleration. What is more, in its Technical Support Document's discussion of traffic impacts that the ORD rule will cause, ARB aggregates the traffic impact statewide, without considering the localized effects that the ORD rule will cause. Specifically, ARB reasons that if the ORD rule's assumed 0.3% increase in construction costs would cause 0.3% fewer lane-miles of construction in California and thus 0.3% more idling statewide, then that increase would not offset the ORD rule's emission reductions. See Technical Support Document, page 142. ARB's analysis of environmental impacts is inadequate: CEQA does not allow project sponsors to trivialize significant local environmental effects by aggregating them statewide. (JOSEPH)

Agency Response: Commenter may be correct that the regulation could affect the size of some fleets, which may, in turn, affect whether a fleet elects to compete for certain projects or may, if a fleet takes on a project, take longer for it – if it has fewer pieces of equipment available – to complete a project. While this may be true, it is speculative to assume that this translates into "more idling, more congestion, and more related worker trips to the area." The fact that some fleets may become smaller does not mean that the projects will not be done and done on time. First, a smaller fleet will continue to have the option of renting, on a short term basis, equipment to meet its particular needs, thus providing them with the equipment they need to complete a specific project. Also, a smaller fleet may not be able to compete successfully for larger projects, this is not to say that there will be no successful bidders for the projects and that the projects will be delayed and perhaps not completed. The decisions on what size fleets will be allowed to bid on a project and what size fleets must be to successfully win a bid are matters controlled by the developer or lead agency of the project, and not this regulation. Instead of using one fleet on a project, a developer may decide that two or more fleets are necessary to meet the scope and timelines of the project. Individual projects must have independent CEQA review, and any foreseeable environmental effects of those projects must be addressed therein, not here.

ARB's analysis of foreseeable environmental effects as set forth in the TSD was reasonable. To do as the commenter suggests – to consider each and every potential local project – would be both speculative and a Herculean, if not an impossible, task. As stated, the environmental impact of local projects requires a project-specific CEQA analysis.

See also the response in section 3)f)iii in Chapter III-A-3 of the FSOR for a discussion of the regulation's impacts on infrastructure projects.

4. **Comment:** Public Resources Code §21092.1 requires an agency to re-notice an EIR when significant new information is added to an EIR prior to certification; Gov't Code §§11346.5, 11346.8(c) (requiring public notice of proposed regulatory language as part of the "EIR" for ARB's certified regulatory program); *see also Citizens of Goleta Valley v. Board of*

Supervisors, 52 Cal.3d 553, 567-68 (1990) (lead agency must consider entire administrative record on environmental effects). Here, ARB's revisions to the regulatory text, as well as its addition to the administrative record, clearly constitute significant new information.

Public Resources Code §21091(a) requires a minimum of 30 days public notice of a draft EIR and 45 days' notice if the agency submits the draft EIR to the State Clearinghouse within the Office of Planning and Research. *See also* Pub. Resources Code §21091(b) (20 days minimum notice for negative declarations, with 30 days minimum required if submitted to the State Clearinghouse). (JOSEPH)

Agency Response: See response to comments above. ARB has fully complied with the notice requirements of Pub. Resource Code §§ 210912 through 21092.1. ARB's Staff Report and TSD were publicly made available more than 45 days before the May 25, 2007 hearing and more than 100 days prior to the date the Board reconvened on July 26, 2007, to approve the regulation for adoption. Additionally ARB issued three additional notices to stakeholders to solicit comments on subsequent modifications that were made to the regulations. These modifications included provisions that would achieve supplemental NOx reductions under the Surplus Off-road Opt-in for NOx program (SOON), which was fully considered by the Board at the July 26, 2007 hearing. In Resolution 07-19, the Board determined that the regulation, including the benefits from the SOON program, would not have an adverse effect on the environment. Finally, Public Resource Code § 21092(b)(3) provides that the notifications requirements of the Code "shall not be construed in any manner that results in the invalidation of an action because of the alleged inadequacy of the notice content, provided that there has been substantial compliance with the content requirements..."

5. **Comment:** To enable other state agencies to review and comment on proposed projects, Public Resources Code §21082.1(c)(4) requires state agencies like ARB to submit their draft environmental documents to the State Clearinghouse. *See* Pub. Resources Code §21082.1(c)(4)(A)(i). The state-agency review period begins on "the date that the State Clearinghouse distributes the document to state agencies," Pub. Resources Code §21091(c)(2), which has not yet occurred. Significantly, ARB's shortened notice period has significantly prejudiced the Association of General Contractor's ability to respond to ARB's proposal. Further, CEQA requires ARB to consult with federal, state, regional, and local public agencies (including transportation planning agencies) before adopting regulations that (a) affect California's transportation infrastructure, (b) regulate off-road equipment leased, owned, or contracted for by California state and local agencies, including trustee agencies, and (c) regulate federally preempted vehicles. *See* 14 Cal. Code Regs. §15086(a)(2)-(3), (5); Pub Resources Code §§21080.3(a);

21080.4, 21092.4(a). Moreover, "informal contact" does not constitute "required consultation." Pub Resources Code §21080.3(a). (JOSEPH)

Agency Response: See response to comment above. As a certified regulatory program, ARB does not issue draft EIRs, but has provided affected state and local agencies with notice of the regulation and has made all pertinent information regarding the regulation and its environmental impacts available to affected agencies and the public in general. Additionally, ARB has consulted with and solicited comments from affected state and local agencies, including the Business, Transportation and Housing Agency, CalTrans, local air districts, cities, counties, and municipalities. The extensive outreach conducted during development of the regulation is described in Chapter III, Section B of the Technical Support Document and in the responses in section 16)h) of Chapter III-A-16 of the FSOR.

6. **Comment:** Under CEQA, the lead agency must certify that "[t]he final EIR was presented to the decision-making body of the lead agency, and that the decision-making body reviewed and considered the information contained in the final EIR prior to approving the project." 14 Cal. Code Regs. §15090(a)(2) (emphasis added). Because CEQA requires that the Board act on ARB's EIR-equivalent, the staff-prepared revisions do not meet CEQA's requirements. Significantly, Board approval is not an empty procedural formality. The ARB staff has omitted several key issues from their analysis, which warrant the Board's attention:

   • ARB's staff-prepared health analysis relied on an analysis by C. Arden Pope III and colleagues (*see* Technical Support Document, App. C, pp. at 1, 3) without reporting on a critical review of Dr. Pope's analyses published in the *Journal of the Air & Waste Management Association* in October 2006. *Compare id. and* C. Arden Pope III & Douglas W. Dockery, "Health Effects of Fine Particulate Air Pollution: Lines that Connect," *Journal of the Air & Waste Management Ass'n*, 56:709-742 (June 2006) *with* Judith C. Chow, *et al,* "Health Effects of Fine Particulate Air Pollution: Lines that Connect--Critical Review Discussion," *Journal of the Air & Waste Management Ass'n*, 56:1368-1380 (Oct. 2006). Even if ARB lawfully could select from among two expert analyses or find the pair mutually inconclusive, it is arbitrary simply to ignore dissenting expert opinion.

   • ARB's staff-prepared health analysis assumes that diesel exhaust has no safe threshold concentration. *See* Technical Support Document, at 199 ("Diesel PM is a carcinogen, and – as such – has no safe threshold below

which there is no risk"). As explained in AGC's initial comments, however, the data are inconclusive on that issue, with rat data suggesting a threshold but also suggesting (without establishing) that that data may not bridge to humans. *See* Air Resources Board & Office of Environmental Health Hazard Assessment, "Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant," at ES-27 (Scientific Review Panel Apr. 22, 1998) ("It has been suggested that information based on the rat data suggested the presence of a threshold. However, the same data suggests that the rat data may not be relevant to humans.") (emphasis added). Before ARB directs the public to spend what even ARB acknowledges as billions of dollars, ARB should conduct – or allow industry, other government, or non-governmental organizations the opportunity to conduct – testing to establish whether diesel exhaust indeed has a threshold below which exposure does not cause cancer. (JOSEPH)

Agency Response: As previously stated, ARB, having a certified regulatory program, does not do draft EIRs. EIR-equivalent documents were presented to the Board and considered before the Board approved the regulation for adoption. Prior to the Executive Officer adopting the final regulation as delegated by the Board, ARB prepared this FSOR document addressing all relevant environmental comments that have been raised and has provided the required Notice of Decision and Response to Significant Environmental Issues to the Secretary of the Resource Agency.

With regard to the first bulleted item above, we believe the health analysis in the Staff Report and Technical Support Document is valid and accurate. For an explanation of why, please see the see responses in section 1)c) of Chapter III-A-1 of the FSOR.

For discussion of the second-bulleted item above, see response to comment 24 in Chapter III-A-19 of the FSOR. Assuming that the commenter is correct and that the EIR-substitute documents did not include the information or analysis claimed, ARB does not understand how such information is relevant to a CEQA inquiry and the Board's determination that the regulation, as adopted, will not result in foreseeable adverse environmental impacts. Both contentions seem to raise questions that the regulation, as adopted, imposes unnecessary and overly stringent emission standards and that ARB should have adopted standards that were less stringent. The fact that ARB adopted more stringent standards in no way undermines its finding that the regulation would not have adverse environmental impacts. Indeed, common sense would dictate that the more stringent the emission standards, the greater the environmental benefits the regulation will achieve.

Chapter III-C Second 15-day Comments

1ee) Dirty Vehicles Moved to Other Districts

1. **Comment:** Under CEQA, whether a rule has a significant, non-mitigable and adverse effect on the environment goes to whether the lead agency must prepare an Environmental Impact Report (EIR), or may simply make a negative declaration. See, e.g., Pocket Protectors v. Coty of Sacramento, 124 Cal.App.4th903,907 (2004). ARB claims that the SOON program will not result in emissions increases in any participating district - pointing out the rule "includes language to prevent fleets from moving older, higher emitting vehicles into a participating air district simply to seek funding" (see Attachment 2, p.10). The staff analysis fails to consider, however, a more likely scenario in which fleets move older, higher-emitting equipment out of a participating air district to surrounding areas. The latter scenario is likely to occur, especially in districts that make the SOON program mandatory, because vehicles "scheduled to leave the district" do not need to be included in a company's NOx index calculation, NOx target rate calculation or application for funding. Under CEQA, ARB must consider that the SOON rule will cause an increase in pollution in districts that do not participate in the program. (AGCA5)

Agency Response: We do not believe that the SOON program will cause emissions disbenefits to air districts not participating in the SOON program. All vehicles eligible for the SOON program will be subject to the performance requirements of sections 2449.1 and 2449.2 of the regulation; therefore, turnover and exhaust retrofit requirements for the regulation eventually must be fulfilled by vehicles not subject to the SOON program. Additionally, off-road vehicles subject to the regulation are expected to travel between air districts regardless of the SOON program; we do not believe the SOON program will cause vehicles to travel outside the SOON air districts unnecessarily.

1ff) Additional Public Hearing for ARB Approval of Guidelines

1. **Comment:** The SOON program contemplates that opt-in air districts will decide whether an on what terms to participate in the SOON program at duty noticed public hearings (2449.3(f)-((2)). By contrast, the ARB approval of an air district's program – which is the step that makes the opt in effective – does not require a rulemaking (2449.3(f)(3)-((4)). Specifically, ARB retains sole authority to approve each air districts administrative guidelines and, in that regard, to modify the proposed local rules in any way the Executive officer sees fit (2449.3(f)(4)). ARB also has sole authority to enforce the "SOON" program (see 2449.3(f)(4)) at the local level. AGC respectfully submits that ARB's action constitutes the amendment of a regulation, Cal. Gov't Code 11342.600, and thus requires

a rulemaking (i.e., an opportunity for comment and full APA compliance at the ARB level). (AGCA5)

Agency Response: We disagree with the commenter's assertion that the Executive Officer's review of the administrative guidelines established by opt-in districts constitutes an amendment of the off-road regulation. The Executive Officer's review does not constitute adoption or implementation of rules of general applicability, but rather review to ensure consistency that existing funding and administrative guidelines (e.g., the Carl Moyer program) are followed.

1gg) Local authority granted by SOON

1. **Comment:** The SOON program states that local air district funding guidelines "may include limitations on the cost-effectiveness of projects that may be funded and must include the method used for prioritizing projects based on cost effectiveness." This provision appears to grant the local air districts unlimited authority to control – and potentially even restrict – a fleet owner's emissions reduction strategy. This conflicts with the underlying objective of the off-road rule, which "contains flexibility provisions to allow each fleet to find its own most cost-effective way to comply and allow(s) fleets to... choose its own best, most cost-effective path towards compliance." What is more, AGC maintains that local governments may not have the latest information on the best strategies and technologies for the construction fleet operating within their jurisdiction. In fact, there is a danger that the best technologies would not be chosen, but instead the best salesman may get their strategy adopted whether it is appropriate for the locality or not. AGC believes it is inappropriate to give air districts that participate in the SOON program such broad authority to essentially create their own unique emission programs for off-road construction equipment. Contractors working across the state of California will face multiple compliance plan and reporting requirements and it will become unduly burdensome (and unnecessarily complicated) for construction companies to demonstrate multi-district compliance. In addition, a patchwork of different emission reduction requirements would undermine the ability of manufactures of equipment, engines and emissions control devices to produce effective products and to meet customer demand. Contractors working in more than one jurisdiction may not be able to use particular pieces of equipment in other jurisdictions. (AGCA5)

Agency Response: The requirements of the regulation, and specifically, the emission targets of the SOON program, have been adopted by the Board. The SOON program was designed to get additional, early emissions reductions above and beyond the requirements of the statewide regulation. Although some fleet owners may feel this takes away some of the flexibility of the general

regulation, the Board felt that the SOON program was necessary to achieve additional emissions reductions in the most polluted areas of the state.

The SOON program does not delegate authority to local air districts to adopt more stringent emission standards for off-road vehicles. For an additional discussion of this issue, including the issue of multi-district compliance, see the response in section III-C-1)c) of the FSOR.

1ii) SOON is a new regulation, doesn't fit under ORD reg

1. **Comment:** The APA requires supplemental proposals undergo a "15-day" notice process where the change is "sufficiently related to the original text that the public was adequately placed on notice that the change could result from the originally proposed regulatory action." Cal. Gov't Code §11346.8(c)(2). Where a revision does not meet the "sufficiently related" test, the APA requires agencies to recommence the full APA process for that new rule (e.g., an initial statement of reasons, the opportunity for a hearing, etc.) The SOON program is in no way an outgrowth of the underlying ORD proposal, and ARB must recommence the full APA rulemaking process for the SOON program. As explained in AGC's prior comments, ARB's enabling legislation, the APA, and CEQA impose various requirements on ARB's setting of emission standards (e.g., cost effectiveness, feasibility, considering alternatives). When ARB adopts a new or revised standard, ARB must comply with these requirements anew. See, e.g., Cal. Gov't Code §11346.5(a)(4) (notice of proposed adoption shall include other information required by statute). Here, ARB must comply with the full range of information required for a new emission standard. (AGCA5)

2. **Comment:** Under California law, the SOON program cannot be promulgated under 15-day comment provisions of Cal Gov Code §11346.8 Under California Law:

   No state agency may adopt, amend, or repeal a regulation which has been changed from that which was originally made available to the public pursuant to Section 11346.5, unless the change is non-substantial or solely grammatical in nature or sufficiently related to the original text that the public was adequately placed on notice that the change could result from the originally proposed regulatory action.

   Cal Gov Code §11346.8(c). Only a "sufficiently related" change to the original regulation may be adopted under the 15-day comment process. (Given its use of the 15-day comment process, ARB presumably recognizes the fact that the SOON is not a "solely grammatical" or "non-substantial" change to the ORD rule. See CCR 40 [changes are non-substantial "if they clarify without materially altering the requirements, rights, responsibilities,

conditions, or prescriptions contained in the original text."]) A change to the original text of a regulation is deemed to be "sufficiently related" only "if a reasonable member of the directly affected public could have determined from the notice that these changes to the regulation could have resulted." 1 CCR 42

While the SOON program is related, in limited respects, to the state-wide regulatory regime embodied in the ORD rule, the SOON constituted a separate and distinct opt-in program to allow local Air Districts to impose a mandatory system for funding and achieving additional NOx reductions above and beyond those required under the ORD Rule. The SOON program is not merely an amendment or "change" to the ORD Rule provisions, and therefore the program cannot be implemented as a "change" under the 15-day notice and comment provision of Cal Gov Code §11346.8(c).

In any event, even if the SOON program could be deemed merely a "change" to the original ORD Rule proposal, it is not "substantially related." Nothing in the original notice for the ORD Rule issued by ARB in April 2007 under Cal Gov Code §11346.5 would have allowed a reasonable member of the public to determine that the SOON program could have resulted. Indeed, the SOON concept and its specific provisions were not contemplated publicly until the very end of the rulemaking process – literally the evening before the Board's final vote to adopt the ORD Rule. For these reasons, the SOON program cannot be adopted under the truncated 15-day notice and comment process, but must be pursued under the ordinary notice-and comment procedures set forth in the California Government Code, including Sections 11346.4 and 11346.5.

For these reasons, ARB must vacate Resolution 07-19 and provide the public announcement and full 45-day period for the SOON program required by the California Government Code. (ATA3)

Agency Response: For the reasons set forth in the agency's response to comments in Chapter III-A-19 in section III-A-19 and in the response to comments of the first 15-Day Notice (section III-B-19) from JOSEPH of this FSOR, ARB does not believe that the inclusion of the SOON program as part of this regulation violates either the APA or CEQA. The SOON program, as adopted, falls within the scope of the initial Notice for this regulation in that it is substantially related to the NOx fleet average requirements and the notification that the Board might consider changes to strengthen the regulation to ensure compliance with federal national ambient air quality standards and to provide greater flexibility for stakeholders. As previously mentioned, stakeholders from both the environmental community and regulated stakeholders understood that the SOON proposal addressed these two noticed needs. For example, see testimony of Mike Lewis of CIAQC at the July 26, 2007, board meeting.

Chapter III-D Third 15-day Comments

2. Comment 433 (AGCA8)

10. **Comment:** On March 19, 2008, in my capacity as an attorney for AGC and CIAQC, I visited the website of the California office of Planning and Research (OPR) and queried the database of CEQA documents filed by ARB from January 2007 to that time. My search and results indicate that ARB has not filed its ORD rulemaking documents with OPR. (AGCA8)

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Wednesday, March 19, 2008

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Date Range: 2007-01-01 to 2008-03-31

SCH#	Lead Agency	Project Title	Description	Document Type	Date Received
2007082087	Air Resources Board	Proposed State Strategy for California's 2007 State Implementation Plan	Notice of Public Meeting to Consider Approval of the Proposed State Strategy for California's State Implementation Plan (SIP) for the Federal 8-Hour Ozone and PM2.5 Standards.	Oth	8/14/2007
2007061077	Air Resources Board	Modification to the Current SIP Commitment for Pesticide Emission Reductions in the Ventura County Nonattainment Area	Revised Proposed Revision and Revised Environmental Analysis to the Pesticide Element of the 1994 Ozone SIP for the Ventura County Nonattainment Area.	Oth	8/13/2007

Agency Response: ARB will be filing a Notice of Decision and Response to Significant Environmental Issues with the Secretary of the Resources Agency, upon final adoption of the regulation.