State of California
AIR RESOURCES BOARD

Resolution 01-38

October 25, 2001

Agenda Item No.: 01-8-1

WHEREAS, sections 39600 and 39601 of the Health and Safety Code authorize the Air Resources Board (the "ARB" or "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, in section 43000 of the Health and Safety Code, the Legislature has declared that the emission of air pollutants from motor vehicles is the primary cause of air pollution in many parts of the State and, in sections 39002 and 39003 of the Health and Safety Code, has charged the Board with the responsibility of systematically addressing the serious air pollution problem caused by motor vehicles;

WHEREAS, sections 43013, 43101, and 43104 of the Health and Safety Code authorize the Board to adopt emission standards and test procedures to control air pollution caused by motor vehicles;

WHEREAS, section 43018(a) of the Health and Safety Code directs the Board to endeavor to achieve the maximum degree of emission reduction possible from vehicular and other mobile sources in order to accomplish the attainment of state ambient air quality standards at the earliest practicable date;

WHEREAS, section 43018(c) of the Health and Safety Code provides that in carrying out section 43018, the Board shall adopt standards and regulations that will result in the most cost-effective combination of control measures on all classes of motor vehicles and motor vehicle fuel, including but not limited to reductions in motor vehicle exhaust and evaporative emissions, and reductions in in-use vehicular emissions through durability and performance improvements;

WHEREAS, section 39667 of the Health and Safety Code authorizes the Board to adopt vehicular emission standards to reduce identified toxic air contaminants;

WHEREAS, California identified diesel PM as a toxic air contaminant in August 1998;

WHEREAS, the Board has adopted standards for exhaust emissions from heavy-duty engines and vehicles in title 13, California Code of Regulations, section 1956.8, which incorporates test procedures for determining compliance with the standards as set forth in the "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles," and Board staff has proposed amendments to these standards and test procedures as presented in Appendices A & B hereto, respectively;

WHEREAS, medium-duty and heavy-duty diesel vehicles are an important contributor to California's economy;

WHEREAS, medium-duty and heavy-duty diesel vehicles are projected to account for as much as 28 percent and 16 percent of the statewide mobile source oxides of nitrogen (NOx) and exhaust particulate matter (PM) inventory in 2010, respectively;

WHEREAS, aftertreatment systems have been developed for medium-duty and heavy-duty diesel vehicles;

WHEREAS, in January 2001, the United States Environmental Protection Agency (U.S. EPA) adopted more stringent emission standards for 2007 and subsequent model year heavy-duty engines and vehicles, hereinafter the "federal 2007 Final Rule";

WHEREAS, the emission standards adopted by the U.S. EPA for 2007 reduce engine exhaust NOx emissions by 90 percent, non-methane hydrocarbon (NMHC) emissions by 72 percent, and engine exhaust PM emissions by 90 percent from heavy-duty and medium-duty diesel engines, compared to the previous standards;

WHEREAS, in the federal 2007 Final Rule the U.S. EPA also adopted revisions to the federal test procedures to account for the more stringent emission standards;

WHEREAS, in the federal 2007 Final Rule the U.S. EPA also adopted federal low sulfur diesel fuel requirements that will enable application of aftertreatment-based emission control systems that may be needed to meet the more stringent 2007 emission standards;

WHEREAS, the federal Clean Air Act grants the State of California the authority to adopt standards for the control of emissions from new motor vehicles and engines if the State determines that the State standards will be, in the aggregate, at least as protective of public health and welfare as the applicable federal standards;

WHEREAS, California currently regulates heavy-duty diesel engine (HDDE) and medium-duty diesel engine (MDDE) exhaust emissions under a waiver of federal preemption granted by the U.S. EPA;

WHEREAS, the California Environmental Quality Act and Board regulations 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 regarding the proposed amendments described herein 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, the Executive Officer has determined that the amendments proposed herein will not have a significant, if any, impact on the creation or elimination of jobs within the State of California, the creation of new businesses or elimination of existing

businesses within California, or the expansion of businesses currently doing business within California;

WHEREAS, the Executive Officer has determined that the amendments proposed herein will not create costs or savings, as defined in Government Code section 11346.5(a)(6), to any state agency or in federal funding to the state, costs or mandate to any local agency or school district whether or not reimbursable by the state pursuant to part 7 (commencing with section 17500), division 4, title 2 of the Government Code, or other non-discretionary saving to local agencies;

WHEREAS, the Board has considered the effects of the proposed amendments on the economy of the State;

WHEREAS, the Board finds that:

1. Ozone, created from the photochemical reaction of primarily NOx and hydrocarbons, causes harmful respiratory effects, and NOx alone can directly harm human health.

2. Although significant strides have been made toward improving California's air quality, health-based state and federal air quality standards continue to be exceeded in regions throughout California; the federal 1-hour ozone standard is exceeded in the South Coast Air Basin, San Diego County, the San Joaquin Valley, the Southeast Desert, the greater Sacramento area and Ventura County, and more areas of the State are likely to be designated nonattainment of the new federal eight-hour ozone standard.

3. In California diesel PM accounted for approximately 70 percent of all air toxics in 2000 and the average potential cancer risk associated with diesel PM is over 500 excess cases per million people.

4. Additional NOx and PM reductions will be needed for one or more nonattainment areas of the state to meet federal or state air quality standards, and additional PM reductions are needed to reduce potential cancer risk.

5. PM aftertreatment systems, such as diesel particulate filters, or traps, have been proven successful in a variety of worldwide applications and demonstration programs, including on heavy-duty and medium-duty diesel engines.

6. Research and demonstration of NOx aftertreatment systems on heavy-duty and medium-duty diesel engines is ongoing, but NOx catalysts have shown reductions of 30-40 percent, selective catalytic reduction has shown reductions of 70 percent while using fuel with sulfur levels higher than what will be in use in 2007, and NOx adsorbers have shown reductions of at least 90 percent.

7. Closed crankcase filtration systems have been used for years in stationary source applications, and are adaptable to heavy-duty and medium-duty diesel engines.

8. Further improvements are expected for heavy-duty and medium-duty engines' exhaust gas recirculation, turbocharging and aftercooling, timing retard, and other advanced fuel injection controls.

9. The emission standards and test procedures proposed herein are identical to those in the federal 2007 Final Rule, which the U.S. EPA adopted in January 2001.

10. In January 2001, the U.S. EPA simultaneously adopted low sulfur fuel standards that will result in making fuel available in-use in California to enable aftertreatment-based emission control systems to operate sufficiently to meet the more stringent emission standards proposed herein.

11. California is the only state that has authority to establish new mobile source emission standards and/or test procedures that differ from federal standards and test procedures.

12. The economic and fiscal impacts of the more stringent emission standards and revised supplemental test procedures proposed herein have been analyzed as required by California law, and the conclusions and supporting documentation for this analysis are set forth in the Initial Statement of Reasons.

13. It agrees with the Executive Officer's determinations regarding economic impacts in California, costs or savings to state agencies, and local mandates.

14. The cost of reducing the emissions due to the more stringent emission standards range from $0.29 to $0.63 per pound of (combined) NOx plus reactive organic gas (ROG) reduced.

15. The cost of reducing the emissions due to the more stringent emission standards range from $3.03 to $6.65 per pound of PM reduced.

16. The cost-effectiveness values above are within the range of values associated with other control measures adopted under Board authority granted in the Health and Safety Code.

17. The cost-effectiveness values above are based on costs for the manufacturers to comply with the 2007 federal requirements since the manufacturers will have already made design changes, as necessary, for their engines to comply with those requirements and will not have to redesign their engines to satisfy the emission standard and test procedure requirements proposed for amendment herein.

18. The Board staff's independent review of documents supporting U.S. EPA's 2007 Final Rule, as referenced in the Staff Report for this proposal, supports the amendments to California's emission standards and test procedures proposed herein.

19. Each provision of the more stringent emission standards proposed herein, as presented in Attachment A hereto, is necessary, cost-effective, and technologically feasible, including but not limited to the major provisions as follows:

A. A more stringent HDDE NOx and NMHC emission standard phased in between 2007 and 2010;

B. A more stringent HDDE PM emissions standard fully implemented in 2007;

C. A more stringent MDDE NOx and NMHC emission standard phased in between 2007 and 2010;

D. A more stringent MDDE PM emission standard and slightly less stringent CO standard fully implemented in 2007;

E. Elimination of the crankcase emission exemption for turbocharged HDDEs; and

F. An averaging, banking, and trading program revised to allow emissions trading between phased-in and phased-out engines, and to allow averaging between weight classes during phase-in.

20. Each amendment to the supplemental test procedures proposed herein, as presented in Attachment B hereto, is necessary and appropriate for ensuring that engines certifying to the more stringent standards proposed herein will actually meet those standards, including but not limited to the following major provisions;

A. Elimination of PM carve-out areas of the Not-to-Exceed (NTE) control zone;

B. Elimination of the maximum allowable emission limits test;

C. Elimination of the three "mystery points";

D. Continuation of the current EURO III European Stationary Cycle and raising of the current NTE test caps; and

E. Reduced sulfur content for emission test and service accumulation fuel.

21. Overall, the amendments proposed herein represent the most cost-effective path toward achieving the maximum degree of emission reductions possible from HDDE and affected MDDE engines, while recognizing constraints due to cost, lead time, and technical challenges.

22. Because the more stringent emission standards and test procedures proposed herein are virtually identical to the federal requirements, adopting them will not cause California motor vehicle emission standards for medium-duty and heavy-duty diesel engines, in the aggregate, to be less protective of public health and welfare than the applicable federal emission standards.

23. Separate California emission standards and test procedures are necessary since California emission standards and test procedures must be, in the aggregate, at least as protective of public health and welfare as applicable federal standards and test procedures.

24. The environmental impacts of the more stringent emission standards and revised supplemental test procedures proposed herein have been analyzed as required by California law, and the conclusions and supporting documentation for this analysis are set forth in the Initial Statement of Reasons.

25. To the extent this regulatory proposal differs from adopted federal regulations, such differences are both authorized by law and are justified by ARB's ongoing program to benefit human health and the environment; and

WHEREAS, the Board further finds that:

1. Adopting the emission standards and test procedures proposed herein is projected to reduce NOx plus ROG emissions by 8.1 tons per heavy heavy-duty diesel engine (33,001 pounds and greater gross vehicle weight rating), 2.2 tons per medium heavy-duty diesel engine (14,001 to 33,000 pounds gross vehicle weight rating), and 3.4 tons per light heavy-duty diesel engine (8,501 to 14,000 pounds gross vehicle weight rating) over the lifetime of each engine.

2. Adopting the emission standards and test procedures proposed herein is projected to reduce PM emissions by 0.3 tons per heavy heavy-duty diesel engine (33,001 pounds and greater gross vehicle weight rating), 0.1 tons per medium heavy-duty diesel engine (14,001 to 33,000 pounds gross vehicle weight rating), and negligibly per light heavy-duty diesel engine (8,501 to 14,000 pounds gross vehicle weight rating) over the lifetime of each engine.

3. Adopting the more stringent emission standards and revised supplemental test procedures proposed herein is projected to reduce statewide NOx emissions by 49 tons per day in 2010 and by 214 tons per day in 2020 from California and out-of-state registered vehicles.

4. Adopting the more stringent emission standards and revised supplemental test procedures proposed herein is projected to reduce statewide ROG emissions by 2 tons per day in 2010 and by 9 tons per day in 2020 from California and out-of-state registered vehicles.

5. Adopting the more stringent emission standards and revised supplemental test procedures proposed herein is projected to reduce statewide PM emissions by 3 tons per day in 2010 and by 9 tons per day in 2020 from California and out-of-state registered vehicles.

6. Adopting the more stringent emission standards and revised supplemental test procedures proposed herein is projected to increase statewide CO emissions by 0.1 tons per day in 2010 and by 0.3 tons per day in 2020 from California and out-of-state registered vehicles; however, this will not create significant local impacts or prevent areas from attaining or maintaining the federal CO standard.

7. The more stringent emission standards and revised supplemental test procedures proposed herein will not have any significant adverse impact on the environment.

8. There is no alternative considered by the Board that would be more effective in carrying out the purpose for which the regulations are proposed or would be as effective and less burdensome to affected private persons.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby amends section 1956.8, title 13, California Code of Regulations; and amends the incorporated "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles," as set forth in Attachments A and B hereto.

BE IT FURTHER RESOLVED that the Board hereby determines that the regulations adopted herein will not cause California motor vehicle emission standards, in the aggregate, to be less protective of public health and welfare than applicable federal standards.

BE IT FURTHER RESOLVED that the Board hereby finds that separate California emission standards and test procedures are necessary to ensure consistent requirements across the nation.

BE IT FURTHER RESOLVED that the Board finds that the California emission standards and test procedures as adopted herein will not cause the California requirements to be inconsistent with section 202(a) of the Clean Air Act and raise no new issues affecting previous waiver determinations of the Administrator of the Environmental Protection Agency pursuant to section 209(b) of the Clean Air Act.

BE IT FURTHER RESOLVED that the Executive Officer shall, upon adoption, forward the regulations to the U.S. EPA with a request for a waiver or confirmation that the regulations are within the scope of an existing waiver of federal preemption pursuant to section 209(b) of the Clean Air Act, as appropriate.

I hereby certify that the above is a true and correct copy of Resolution 01-38, as adopted by the Air Resources Board.

Marie Kavan

Marie Kavan, Clerk of the Board

Rec'd By
Office of the Secretary

Agency of California

Resolution 01-38

October 25, 2001

Identification of Attachments to the Resolution

Attachment A:

Amendments to Title 13, California Code of Regulations, Section 1956.8; Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Year Heavy-Duty Engines and Vehicles.

Attachment B:

Amendments to California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles.

State of California
Environmental Protection Agency
AIR RESOURCES BOARD

Notice of Decision and
Response to Significant Environmental Issues

Item:	Stringent Emissions Standards for 2007 and Subsequent Model Year New Heavy-Duty Diesel Engines
Adopted By:	Resolution 01-38
Agenda Item:	01-8-1
Public Hearing Date:	October 25, 2001
Issuing Authority:	Air Resources Board
Comment:	No comments were received identifying any significant environmental issues pertaining to this item. The Staff Report identified no significant adverse environmental effects.
Response:	N/A
Certified:	Alexa Malik, Assistant Board Administration & Regulatory Coordination Unit
Date:	September 5, 2002

Recv'd By
Office of the Secretary

Resources Agency of California