STATE OF CALIFORNIA PETE WILSON, Governor

AIR RESOURCES BOARD
HAAGEN-SMIT LABORATORY
9528 TELSTAR AVENUE
EL MONTE, CA 91731-2990
PHONE: (818) 575-6800

MAIL-OUT #95-36

October 12, 1995

State of California
AIR RESOURCES BOARD

Notice of Public Availability of Modified Text
and Supporting Documents and Information

PUBLIC HEARING TO CONSIDER AMENDMENTS TO THE CERTIFICATION REQUIREMENTS AND PROCEDURES FOR LOW-EMISSION PASSENGER CARS, LIGHT-DUTY TRUCKS AND MEDIUM-DUTY VEHICLES

Public Hearing Date: September 28, 1995
Public Availability Date: October 20, 1995
Deadline for Public Comment: November 3, 1995

At a public hearing held September 28, 1995, the Air Resources Board (the Board) considered amendments to certification requirements and test procedures for low-emission passenger cars, light-duty trucks and medium-duty vehicles, including the accelerated introduction of ultra-low-emission medium-duty vehicles; adoption of baseline specific reactivities for medium-duty low-emission vehicles (LEVs) and ultra-low-emission vehicles (ULEVs); adoption of interim reactivity adjustment factors (RAFs) for the remaining emission categories for Phase 2 reformulated gasoline, methanol, compressed natural gas and liquefied petroleum gas; and numerous technical amendments pertaining to the implementation of the low-emission vehicle regulations. The amendments proposed in this rulemaking cover a wide range of topics and affect sections 1956, 1960.1, 1965, 2062, 2101 and 2292.1, Title 13, California Code of Regulations (CCR) and six ARB test procedures that are incorporated by reference in those sections: "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles," California Exhaust Emission Standards and Test Procedures for 1987 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles," "California Non-Methane Organic Gas Test Procedures," "California Assembly-Line Test Procedures for 1998 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles," "California New Vehicle Compliance Test Procedure," and "California Motor Vehicle Emission Control and Smog Index Label Specifications." The proposed regulatory action is described in detail in the Staff Report: Initial Statement of Proposed Rulemaking released on August 11, 1995.

At the hearing, the Board approved the regulatory amendments with some modifications to the originally proposed regulatory language. The modifications, which were suggested by the staff at the hearing, include:

- Modify the ULEV emission standards for medium-duty vehicles certified to the optional heavy-duty engine standards to align with the United States Environmental Protection Agency Statement of Principles issued in July, 1995;

- Require the inclusion of a smog index on the window label of 1998 and subsequent model light-duty vehicles;

- Increase the 50°F multiplier for LEVs and ULEVs to 2.0 from 1.75 and 1.0, respectively;

- Add intermediate in-use compliance standards for medium-duty LEVs and ULEVs certified to the optional heavy-duty engine standards;

- Add intermediate in-use compliance standards for chassis-certified Super-Ultra-Low-Emission Vehicles (SULEVs);

- Allow 1998-2000 model year medium-duty LEVs to line-cross applicable NOx standards;

- Allow the stock solution used in the measurement of alcohols in automotive exhaust to be prepared volumetrically as well as gravimetrically; and

- Modify various provisions of the Assembly-Line Test Procedures to clarify previous requirements.

Appended as Attachment I to this notice is a copy of Board Resolution 95-40, which sets forth the Board's action. Included in the resolution is Attachment H, which describes the modifications to the original proposal suggested by the staff and approved by the Board. The resolution directed the Executive Officer to incorporate into the approved amendments the modifications described in Attachment H, with such other conforming modifications as may be appropriate, and to make the modified regulatory language available to the public for a supplemental 15-day comment period.

Attachment II to this notice contains the modified texts of sections 1956.8, 1960.1 and 1965 with additions to the originally proposed text shown by ***bold italics*** and deletions shown by ~~**bold strikeout**~~.

The six Test Procedures being amended in this rulemaking are voluminous and include very technical and detailed provisions that are of limited general interest. For all persons who testified at the hearing, submitted written comments at the hearing or during the public comment period, or requested notification of the availability of the modifications to the originally proposed text, Attachment III to this notice includes the complete texts of the test procedures being amended in this rulemaking, with the modifications

to the originally proposed texts clearly indicated. For the other recipients of this notice, Attachment III contains a form that may be used to request copies of the complete modified texts of the Test Procedures. Copies of the Test Procedures showing the modifications to the original proposal can be requested from Ms. Donna Barragan, Mobile Source Division, California Air Resources Board, 9528 Telstar Avenue, El Monte, California 91731, fax no. (818) 575-6699. These documents will also be available on the Air Resources Board Information System (ARBIS) electronic bulletin board. The documents may be found in the "LEV Program" menu item in the "System Features" menu. The ARBIS may be accessed via modem by calling (916) 322-2826. Please make sure your communications parameters are set to 8-N-1. If you have a 9600 Baud modem or greater, use the ANSI capabilities that are provided by the more recent modem software packages. Modems slower than 9600 will work with VT-100 or TTY terminal emulation. If you have questions regarding access to the ARBIS, please contact the Business Assistance Hot Line at 1-800-ARB-HLP2 (in California) or (916) 323-3336.

The modified texts of the regulations and Test Procedures being made available in conjunction with this notice include four additional modifications identified subsequent to the September 28, 1995 hearing. These modifications are described in Attachment IV to this notice, and concern in-use standards for light-duty LEVs, changing the designation of Super Low-Emission Vehicle to Super-Ultra-Low-Emission Vehicle (SULEV), conforming the SULEV certification requirements with those applicable to other low-emission vehicles, and adding an in-use standard for SULEVs certified to the optional heavy-duty engine standards.

In addition, staff has added to the rulemaking record a document entitled, "Establishment of Smog Indices for New Light-Duty Vehicles," appended as Attachment V herein, which summarizes the methodology used in calculating the proposed smog indices.

In accordance with section 11346.8 of the Government Code, the Board directed the Executive Officer to adopt the proposed amendments after making the modified regulatory language available to the public for comment for a period of at least 15 days, provided that the Executive Officer is to consider such written comments as may be submitted during this period, to make such modifications as may be appropriate in light of the comments received, and to present the regulations to the Board for further consideration if he determines that this is warranted.

Written comments on the proposed modifications and the information in Attachment V must be submitted to the Board Secretary, Air Resources Board, P.O. Box 2815, Sacramento, California 95812, no later than the deadline for public comment identified above, for consideration by the Executive Officer prior to final action. Only comments relating to the modifications or the

supporting document described in this notice will be considered by the Executive Officer.

Sincerely,

K. D. Drachand, Chief
Mobile Source Division

Attachments

ATTACHMENT I

Resolution 95-40
with Attachment H

State of California
AIR RESOURCES BOARD

Resolution 95-40

September 28, 1995

Agenda Item No.: 95-9-1

WHEREAS, sections 39600 and 39601 of the Health and Safety Code authorize the Air Resources Board (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, in section 43000 of the Health and Safety Code the Legislature has declared that the emission of air contaminants from motor vehicles is the primary cause of air pollution in many parts of the state;

WHEREAS, Health and Safety Code section 43013 authorizes the Board to adopt and implement motor vehicle emission standards and in-use performance standards for the control of air contaminants which the Board has found to be necessary, cost-effective, and technologically feasible to carry out the purposes of Division 26 of the Health and Safety Code;

WHEREAS, sections 43018(a) and (b) of the Health and Safety Code direct 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 the state ambient air quality standards at the earliest practicable date, and direct the Board no later than January 1, 1992 to take whatever actions are necessary, cost-effective, and technologically feasible in order to achieve, by December 31, 2000, specified reductions in the emissions of reactive organic gases (ROG), oxides of nitrogen (NOx), particulates (PM), carbon monoxide (CO), and toxic air contaminants from vehicular sources;

WHEREAS, section 43018(c) of the Health and Safety Code provides that in carrying out section 43018, the Board shall adopt standards and regulations which 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 43101 of the Health and Safety Code directs the Board to adopt and implement emission standards for new motor vehicles which the Board has found to be necessary and technologically feasible to carry out the purposes of Division 26 of the Health and Safety Code;

WHEREAS, section 43104 of the Health and Safety Code directs the Board to adopt test procedures for determining whether new motor vehicles are in compliance with the emission standards established by the Board;

WHEREAS, in a 1990-1991 rulemaking, the Board adopted the California Low-Emission Vehicle regulations, which require the phased introduction of vehicles meeting standards for four progressively more stringent categories of light-duty vehicles: Transitional Low-Emission Vehicles (TLEVs), Low-Emission Vehicles (LEVs), Ultra-Low-Emission Vehicles (ULEVs), and Zero-Emission Vehicles (ZEVs);

WHEREAS, the Low-Emission Vehicle regulations include a protocol under which the Executive Officer is to establish reactivity adjustment factors (RAFs) for representative vehicle/fuel combinations by applying a reactivity scale based on the maximum incremental reactivity (MIR) of individual hydrocarbon species to hydrocarbon exhaust speciation profiles; these RAFs are to be applied to the non-methane organic gas exhaust mass emissions from TLEVs, LEVs and ULEVs operating on fuels other than conventional gasoline, to determine compliance with applicable emission standards;

WHEREAS, the Board has to date established through rulemakings RAFs for light-duty TLEVs operated on methanol (M85), and for light-duty TLEVs and LEVs operated on Phase 2 reformulated gasoline; the Board has also established by rulemaking baseline values of reactivity expressed in grams of ozone per gram non-methane organic gases (NMOG) for light-duty conventional gasoline TLEVs, LEVs and ULEVs of 3.42, 3.13 and 3.13 respectively;

WHEREAS, the State Implementation Plan (SIP) approved by the Board in November 1994 establishes a plan for achieving attainment of the federal ambient ozone air quality standards, including Measure M-3 which calls for the accelerated introduction of medium-duty ULEVs to achieve emission reductions of reactive organic gases (ROG) and oxides of nitrogen (NOx);

WHEREAS, Senate Bill 2060 (Stats. 1994, ch. 1192) provides for a program under which certain motor vehicles are assigned smog index numbers, based on the tailpipe and evaporative emissions levels to which the vehicles were certified;

WHEREAS, Senate Bill 2060 and sections 39600, 39601, and 43200 of the Health and Safety Code authorize the Board to adopt regulations assigning smog index numbers for new California-certified passenger cars and light-duty trucks, and specifying the form of window decal disclosing the smog index number;

WHEREAS, in conjunction with a public hearing notice dated August 11, 1995, the staff has proposed a wide range of regulatory amendments to the Low-Emission Vehicle regulations and to the general certification requirements and procedures for light and medium-duty vehicles, including the following elements:

Increasing the required number of medium-duty ULEVs from 15% to 40% by the 2003 model year; requiring 100% ULEVs for medium-duty vehicles certified to the optional heavy-duty engine standards in Title 13, California Code of Regulations, section 1956.8; amending the optional heavy-duty engine standards applicable to MDVs to align with the proposed U.S. Environmental Protection Agency (U.S. EPA) standards of either 2.4 grams per brake horsepower-hour (g/bhp-hr) non-methane hydrocarbons (NMHC) plus NOx or 2.5 g/bhp-hr NMHC plus NOx with a 0.5 g/bhp-hr cap on NMHC; and establishing a new emission standard for Super Low-Emission Vehicles (SLEVs) equal to one-half of the applicable ULEV emission standard;

Establishing baseline values of reactivity for medium-duty LEVs and ULEVs operating on conventional gasoline of 3.13 grams of ozone per gram NMOG, interim RAFs for light and medium-duty ULEVs operating on Phase 2 reformulated gasoline certification fuel of 0.94, RAFs for light and medium-duty LEVs and UELVs operating on compressed natural gas of 0.43, RAFs for light and medium-duty LEVs and ULEVs operating on liquefied petroleum gas of 0.50, and RAFs for light and medium-duty LEVs and ULEVs operating on M85 of 0.41; the proposed values are interim values to be effective through the 2000 model year;

Assigning smog index numbers to new 1995 and subsequent model-year passenger cars and light-duty trucks, and specifying that a window decal disclosing the smog index number must be affixed to the vehicle in a readily visible location;

Updating and revising the certification test procedures and requirements for low-emission vehicles by, among other things, revising the laboratory methods for the measurement of NMOG, and adding requirements for utilizing new on-board diagnostic systems during quality audit testing and new vehicle compliance testing; and amending the specifications for commercial M100 (pure methanol) fuel to remove the requirement for a luminosity-enhancing additive or substitute;

WHEREAS, the staff's proposal would be effected by amendments to Title 13, California Code of Regulations, sections 1956.8, 1960.1, 1965, 2101, 2062 and 2292.1 as set forth in Attachment A hereto; amendments to the California Exhaust Emission Standards and Test Procedures for 1987 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles, which is incorporated by reference in section 1956.8, as set forth in Attachment B hereto; amendments to the California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty

Vehicles, which is incorporated by reference in section 1960.1, as set forth in Attachment C hereto; amendments to the California Motor Vehicle Emission Control and Smog Index Label Specifications, which is incorporated by reference in section 1965, as set forth in Attachment D hereto; amendments to the California Assembly-Line Test Procedures for 1998 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles, which is incorporated by reference in section 2062, as set forth in Attachment E hereto; amendments to the California Non-Methane Organic Gas Test Procedures, as set forth in Attachment F hereto; and amendments to the California New Vehicle Compliance Test Procedure, which is incorporated by reference in section 2101, as set forth in Attachment G hereto;

WHEREAS, the California Environmental Quality Act and Board regulations require that an action not be adopted as proposed where it will have significant adverse environmental impacts if feasible alternatives or mitigation measures are available which would substantially reduce or avoid such impacts;

WHEREAS, the Board has considered the impact of the proposed regulatory action on the economy of the state;

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, the Board finds that:

The proposed medium-duty vehicle phase-in requirements are necessary and appropriate to achieve the maximum feasible emission reductions from medium-duty vehicles in order to attain the federal and state ambient air quality standards at the earliest practicable date;

The proposed NMOG, CO, NOx and particulate standards for medium-duty vehicles are technologically feasible and cost-effective, and together with existing and anticipated standards and regulations for all classes of motor vehicles, reflect the most cost-effective combination of control measures to control air pollution caused by motor vehicles;

The proposed interim baseline specific reactivity values and RAFs are necessary and appropriate in order to provide manufacturers with sufficient leadtime to develop and incorporate emission control strategies that take into account both the mass emissions and relative reactivity of new motor vehicles operated on nonconventional fuels; establishment of interim values will accommodate the consideration of any additional data and analytical methods in the subsequent adoption of RAFs for such categories for the 2001 and subsequent model years;

The smog index label specifications approved herein are necessary and appropriate to fulfill the Board's responsibilities under Health and Safety Code section 43200 et seq., and are necessary for the protection and information of consumers;

The remaining regulatory amendments approved herein are necessary and appropriate to clarify requirements, avoid unduly burdensome restrictions, and facilitate implementation of the Low-Emission Vehicle Program;

The economic and cost impacts of this regulatory action have been analyzed as required by California law, and the conclusions and supporting documentation for this analysis are set forth in the Staff Report;

The reporting requirements of this regulatory action which apply to businesses are necessary for the health, safety, and welfare of the people of the State;

The provisions of this regulatory action which differ from federal requirements are authorized by California law;

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

The amendments in this rulemaking action relating to the RAFs will not have any significant adverse impacts on the environment;

Adverse environmental impacts may potentially result from the amendments relating to MDVs, in that the amendments allow a slight relaxation of the ULEV CO and PM standards, which in turn may result in an increase in CO and PM emissions from MDVs;

Allowing a slight relaxation of the CO and PM standards is necessary in order to allow manufacturers to succeed in developing low-NOx strategies to meet the stringent MDV NOx levels specified in the regulations, and the significant decrease in NMOG and NOx emissions that will result from this rulemaking action overrides any adverse environmental impacts that might occur from a slight increase in CO and PM emissions;

Although the regulations will allow more PM to be emitted directly from MDVs, the lower NOx emissions from MDVs will partially mitigate this increase by reducing the formation of secondary PM in the atmosphere;

There are no other feasible mitigation measures that would reduce the potential environmental impacts from increased CO and PM emissions, while at the same time providing the substantial overall health benefits from the significant NMOG and NOx emissions reductions realized by the regulations;

NOW, THEREFORE, BE IT RESOLVED that the Board hereby approves the amendments to sections 1956.8, 1960.1, 1965, 2062, 2101 and 2292.1, and the documents incorporated therein, as set forth in Attachments A through H hereto.

BE IT FURTHER RESOLVED that the Board directs the Executive Officer to incorporate into the approved amendments the modifications described in Attachment H hereto, with such other conforming modifications as may be appropriate, and to adopt the amendments approved herein, 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 modifications after comments have been received, and shall present the regulations to the Board for further consideration if he determines that this is warranted.

BE IT FURTHER RESOLVED that the Board hereby determines that the amendments approved herein will not cause the 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 motor vehicle emission standards and test procedures are necessary to meet compelling and extraordinary conditions.

BE IT FURTHER RESOLVED that the Board finds that the California motor vehicle emission standards and test procedures as amended 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 U.S. EPA pursuant to section 209(b) of the Clean Air Act.

BE IT FURTHER RESOLVED that the Executive Officer shall, upon adoption, forward the amendments pertaining to new motor vehicle emission standards and accompanying enforcement procedures to the U.S. EPA with a request for a waiver of federal preemption, or confirmation that the amendments are within the scope of an existing waiver, pursuant to section 209(b) of the Clean Air Act.

I hereby certify that the above is a true and correct copy of Resolution 95-40, as adopted by the Air Resources Board.

Pat Hutchens

Pat Hutchens, Board Secretary

Resolution 95-40

September 28, 1995

Identification of Attachments to the Resolution

Attachment A: Amendments to Title 13, California Code of Regulations, sections 1956.8, 1960.1, 1965, 2062, 2101 and 2292.1, as appended to the Staff Report released August 11, 1995.

Attachment B: Amendments to the California Exhaust Emission Standards and Test Procedures for 1987 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles, as made available by the ARB's Mobile Source Division August 11, 1995.

Attachment C: Amendments to the California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles, as made available by the ARB's Mobile Source Division August 11, 1995.

Attachment D: Amendments to the California Motor Vehicle Emission Control and Smog Index Label Specifications, as made available by the ARB's Mobile Source Division August 11, 1995.

Attachment E: Amendments to the California Assembly-Line Test Procedures for 1998 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles, as made available by the ARB's Mobile Source Division August 11, 1995.

Attachment F: Amendments to the California Non-Methane Organic Gas Test Procedures, as made available by the ARB's Mobile Source Division August 11, 1995.

Attachment G: Amendments to the California New Vehicle Compliance Test Procedure, as made available by the ARB's Mobile Source Division August 11, 1995.

Attachment H: Staff's Suggested Changes to the Original Proposal, distributed at the hearing on January 14, 1993.

ATTACHMENT H

PUBLIC HEARING TO CONSIDER AMENDMENTS TO THE CERTIFICATION REQUIREMENTS AND PROCEDURES FOR LOW-EMISSION PASSENGER CARS, LIGHT-DUTY TRUCKS AND MEDIUM-DUTY VEHICLES

Staff's Suggested Changes to the Original Proposal

September 28, 1995

SUMMARY OF PROPOSED MODIFIED TEXT

The following is a summary of the changes staff is proposing to the regulatory amendments being considered at the Board hearing conducted on September 28, 1995. Modifications to the originally noticed text are designated by ***bold italics*** and ~~***bold strikeout***~~ to represent additions and deletions, respectively.

I. Title 13, California Code of Regulations Section 1956.8(c) and (h); California Exhaust Emission Standards and Test Procedures for 1987 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles, section 86.098-10(f)(1).

A. Pursuant to the Statement of Principles issues by the U.S. EPA in July 1995, staff is recommending adoption of the following proposed federal standards for 2004 and subsequent model medium-duty vehicles and heavy-duty otto-cycle engines.

1. The proposed standards applicable to medium-duty vehicles certified to the optional heavy-duty engine standards as set forth in Title 13, CCR, Section 1956.8(h) are as follows:

Exhaust Emission Standards for Engines Used in Incomplete Medium-Duty Low-Emission Vehicles ~~and~~ Ultra-Low-Emission Vehicles, and Super *Ultra*-Low-Emission Vehicles and for Diesel Engines Used in Medium-Duty Low-Emission Vehicles ~~and~~ Ultra-Low-Emission Vehicles, and Super *Ultra*-Low-Emission Vehicles
(grams per brake horsepower-hour)

Model Year	Vehicle Emissions Category	Carbon Monoxide	Non-Methane Hydrocarbons and Oxides of Nitrogen		Formaldehyde	Particulates
~~*2004 and subsequent*~~[G]	~~*ULEV*~~	~~*14.4*~~	~~*NMHC*~~	~~*NOx*~~	~~*0.050*~~	~~*0.10*~~
			~~*0.5*~~	~~*2.0*~~		
2004 and subsequent	*ULEV - Opt A.*	*14.4*	*2.5**		*0.050*	*0.10*
2004 and subsequent	*ULEV - Opt. B*	*14.4*	*2.4**		*0.050*	*0.10*

* ***Manufacturers have the option of certifying to either option A or B. Manufacturers electing to certify to Option A must demonstrate that the NMHC emissions do not exceed 0.5 g/bhp-hr.***

2. The standards being proposed for heavy-duty otto-cycle engines are set forth in Title 13, CCR Section (c) and in the California Exhaust Emission Standards and Test

Procedures for 1987 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles, Section 86.098-10(f)(1) is as follows:

> (i) For Otto-cycle heavy-duty engines fueled with either gasoline or liquefied petroleum gas and intended for use only in vehicles with a Gross Vehicle Weight Rating ~~*between 8,500 and*~~ *greater than* 14,000 pounds.
>
> ~~*(A) Total Hydrocarbons or OMHCE. 0.7 grams per brake horsepower-hour, as measured under transient operating conditions.*~~
>
> ~~*(B) Optional Non-Methane Hydrocarbons[1]. 0.4 grams per brake horsepower-hour, as measured under transient operating conditions.*~~
>
> ~~*(C)*~~ *(A)* Carbon Monoxide. 14.4 grams per brake horsepower-hour, as measured under transient operating conditions.
>
> ~~*(D) Oxides of Nitrogen. 2.0 grams per brake horsepower-hour, as measured under transient operating conditions.*~~
>
> *(B) Non-Methane Hydrocarbons + Oxides of Nitrogen.*
>
> *(a) 2.5 grams per brake horsepower-hour total for ULEVs, as measured under transient operating conditions, including a cap of 0.5 grams per brake horsepower-hour for Non-Methane Hydrocarbons; or*
>
> *(b) 2.4 grams per brake horsepower-hour total for ULEVs as measured under transient operating conditions.*

B. Staff is also proposing an extension of the intermediate in-use compliance standards for medium-duty vehicles certifying to the optional heavy-duty engine standards as set forth in Title 13, CCR, Section 19546.8(h), footnote H:

H. For engines certified to the 3.5 grams per brake horsepower-hour LEV standards, the in-use compliance standard shall be 3.7 grams per brake horsepower-hour (g/bhp-hr) for the first two model years of introduction. For engines certified to the 2002 and 2003 model year LEV standards, the in-use compliance standard shall be 3.2 g/bhp-hr. For engines certified to the 1992 through 2003 model year ULEV standards, the in-use compliance standard shall be 2.7 g/bhp-hr.

II. Title 13, California Code of Regulations, Section 1960.1, section (h)(2); California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles, sections 3.j, 4, and 6.

A. Staff is proposing the following intermediate in-use standards for dedicated fuel Super Ultra-Low-Emission Vehicles (SULEVs) as set forth in Section 1960.1, section (h)(2). (The same text is being proposed for the California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles, section 3.j)

Intermediate In-Use Compliance Standards										
Emission Category	Model Year	Durability Vehicle Basis (mi)	3751-5750 lbs.		5751-8500 lbs.		8501-10,000 lbs.		10,001-14,000 lbs.	
			NMOG (g/mi)	NOx* (g/mi)	NMOG (g/mi)	NOx* (g/mi)	NMOG (g/mi)	NOx* (g/mi)	NMOG (g/mi)	NOx * (g/mi)
SULEV	*through 2002*	***50,000***	***0.072***	***0.3***	***0.084***	***0.45***	***0.100***	***0.5***	***0.130***	***0.7***
		120,000	***0.100***		***0.117***		***0.138***		***0.180***	

*Intermediate in-use NOx standards shall only apply to the 1998, 1999 and 2000 model year MDVs.

Staff is also proposing to correct the typographical error in footnote (9)(b) of section (h)(2):

. . . . Intermediate in-use compliance standards shall to apply to LEVs and ULEVs through the 1999 model year and to SULEVs through the ~~*2005*~~ ***2001 model*** year.

B. Pursuant to a request from the automobile manufacturers, staff is allowing the use of durability data for medium-duty vehicles which line cross applicable NOx standards for the 1998, 1999 and 2000 model years. (Section 4.c.5 and Section 6.b.5 of the California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles).

Section 4. Initial Requirements
c. Test Vehicles and Test Engines; Assigned Deterioration Factors
5. Amend subparagraph (f) and (h)(1)(v) by adding the following additional requirement which reads:

... For 1997 (~~*1998*~~ ***2001*** for medium-duty vehicles) and subsequent model-year vehicles, durability data shall be submitted from only California (or fifty-state) configuration vehicles. ....

For the 1998 through 2000 model years, the Executive Officer shall allow the use of durability data for medium-duty vehicles certifying to the LEV standards as set forth in section 3.j. of these test procedures submitted from California only, federal, or fifty-state durability vehicles which line cross applicable NOx standards. This provision shall also be applicable to durability data generated using a federal or California alternate durability program. Medium-duty vehicles certifying to the optional heavy-duty engine

standards as set forth in Title 13, CCR Section 1956.8(h) shall not be eligible for this NOx line-crossing exemption.

Section 6. Demonstrating Compliance
b. Compliance with Emission Standards
5. Amend subparagraph (a)(4)(i)(B) (durability vehicles must meet emissions standards) to read:

(B) .... ***For the 1998 through 2000 model years, the Executive Officer shall allow the use of durability data for medium-duty vehicles certifying to the LEV standards as set forth in section 3.j. of these test procedures submitted from California only, federal or fifty-state durability vehicles which line cross applicable NOx standards. Medium-duty vehicles certifying to the optional heavy-duty engine standards as set forth in Title 13, CCR Section 1956.8(h) shall not be eligible for this NOx line-crossing exemption.***

C. Finally, staff is proposing an increase of the LEV and ULEV 50°F multiplier pursuant to a request from manufacturers that all of the multipliers should be the same value.

Section 11. Additional Requirements
k. **50°F Emission Test Requirement.** .... For all TLEVs, emissions of NMOG and formaldehyde at 50° F shall not exceed the 50,000 mile certification standard multiplied by a factor of 2.00. For all LEVs, emissions of NMOG and formaldehyde at 50° F shall not exceed the 50,000 mile certification standard multiplied by a factor of ~~*1.75*~~ ***2.00***. For all ULEVs, emissions of NMOG and formaldehyde at 50° F shall not exceed the 50,000 mile certification standard multiplied by a factor of ~~*1.0*~~ ***2.00***.

III. Non-Methane Organic Gas (NMOG) Test Procedures

A. Staff is proposing to allow the stock solution to be prepared volumetrically in addition to gravimetrically. This modification is in Section C, Method 1001, Determination of Alcohols in Automotive Source Samples by Gas Chromatography of the California NMOG Test Procedures.

5.4 A stock solution is prepared gravimetrically ***or volumetrically*** by diluting methanol and ethanol with deionized or purified water, e.g., for this method the stock solution contains ~~is~~ approximately 1 μg/mL ~~percent by volume~~ of each target alcohol.

IV. California Assembly-Line Test Procedures for 1998 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles.

A. Pursuant to a request from industry, staff is proposing that language be re-inserted which allows manufacturers to reject data from quality-audit test vehicles if it can be demonstrated that they are not representative of production vehicles. The proposed language is in Section C.4 of the California Assembly-Line Test Procedures.

~~Based upon additional information submitted by a manufacturer, the Executive Officer may allow rejection of any data from vehicles if they are considered to be not representative of production~~. ***Based upon additional information submitted by a manufacturer, the Executive Officer may allow rejection of any data from vehicles if they are considered to be not representative of production.***

B. In order to clarify the conditions under which the illumination of the MIL should be reported in section C.4 of the California Assembly-Line Test Procedures, staff is proposing the following language:

... or (c) the MIL illuminates during vehicle break-in, preconditioning or testing ***for the malfunction of a specific component or system***

C. In order to conform the text of this section with other requirements in the test procedures, staff is proposing an amendment to the language in section C.5 as follows:

(a) For an engine family certified to non-methane hydrocarbon (NMHC) standards, the manufacturer shall measure the NMHC content ~~***which shall be multiplied by***~~ ***and apply*** the NMHC DF ***to the result.***

V. California Motor Vehicle Emission Control and Smog Index Label Specifications

A. Staff is proposing to remove the requirement that San Diego and Ventura Counties must adopt pilot programs before the window label requirement becomes operative. Staff is therefore proposing that the smog index label become effective beginning with the 1998 model year. (California Motor Vehicle Emission Control and Smog Index Label Specifications, Section 2.(b))

(b) The specifications for smog index labels shall apply to all new passenger cars and light-duty trucks. This labeling requirement shall ~~***apply 90 days after both of the following occur***~~ ***be effective starting with the 1998 model year.***

~~***(1) The system required by subdivision (b) of Section 44060 of the Health and Safety Code for the electronic filing of certificates of compliance or noncompliance is determined to be operational by the Department of Consumer***~~

~~*Affairs and that fact is reported by the department to the California Secretary of State.*~~

~~*(2) Both the San Diego County Air Pollution Control District and the Ventura County Air Pollution Control District have sufficient funds available to implement the pilot program established pursuant to subdivision (b) of Section 43705 of the Health and Safety Code, as determined by each of those districts and reported by each district to the California Secretary of State.*~~

~~*The labeling requirement for smog index labels shall become inoperative five years from the date determined above.*~~

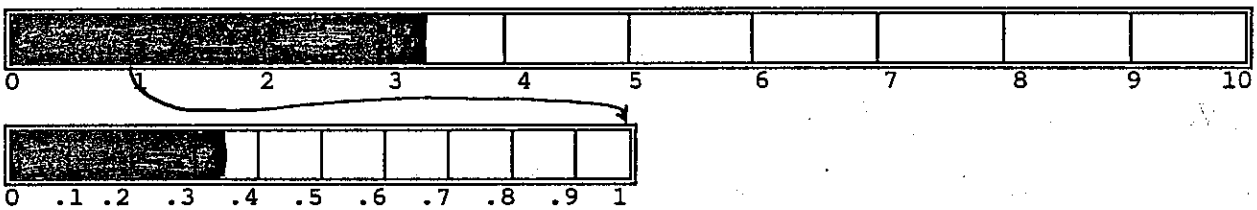
B. Staff is also proposing a modification to the placement of the window label:

3.5 Smog Index Labels. A smog index label made of paper or plastic shall be securely affixed in a readily visible location ~~*either on a side window to the rear of the driver or, if it cannot be so placed, to the windshield of the motor vehicle*~~.

C. In order to be able to distinguish the difference between old and new vehicles and clean vehicles from the baseline vehicle, staff is proposing the following modified label. In addition, manufacturers have requested that an alternative to the prescribed window label specification be allowed. Therefore, staff is proposing the following language:

...This explanatory information ~~*shall*~~ *may* take the following form:

The Smog Index of this vehicle is 0.34



Note: The Smog Index (SI) indicates the relative level of pollutants emitted by the vehicle. The lower the SI, the lower the vehicle's emissions.

An alternative label may be used if shown to yield equivalent clarity and if approved in advance by the Executive Officer.

Attachment II

Amendments to Title 13, California Code of Regulations
Sections 1956.8, 1960.1 and 1965

SECTION 1956.8, TITLE 13, CCR

Amend Title 13, California Code of Regulations, section 1956.8, as follows[1]:

1956.8 Exhaust Emission Standards and Test Procedures - 1985 and Subsequent Model Heavy-Duty Engines and Vehicles.

(a) through (b) [No Change]

---

[1] The regulatory amendments proposed in this rulemaking are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions from existing regulations. In June, 1995, staff will proposed modifications to the heavy-duty otto-cycle regulations. For that rulemaking, added text are identified herein by *italics*; deletions are shown in ~~*italicized strikeout*~~. Modifications to the originally noticed text (August, 1995) are designated by ***bold italics*** and ~~***bold strikeout***~~ to represent additions and deletions, respectively.

(c)(1) The exhaust emissions from (A) new 1987 and subsequent model heavy-duty otto-cycle engines~~,~~ ~~(~~except methanol-fueled engines~~,~~ and *except* heavy-duty otto-cycle natural-gas-fueled and liquified-petroleum-gas-fueled otto-cycle engines derived from diesel-cycle engines~~,~~) and (B) from new 1993 and subsequent model heavy-duty methanol-fueled otto-cycle engines~~,~~ ~~(~~except in all cases engines used in medium-duty vehicles)~~,~~ shall not exceed~~:~~.

Exhaust Emission Standards
(grams per brake horsepower-hour)

Model Year	Total Hydrocarbons or OMHCE[A]	Optional Non-Methane Hydrocarbons[A]	Carbon Monoxide[B]	Oxides of Nitrogen
1987[C]	1.1[D] 1.9[E]		14.4[D] 37.1[E]	10.6 10.6
1988-1989	1.1[D] 1.9[E]		14.4[D] 37.1[E]	6.0 6.0
1990	1.1[D] 1.9[E]	0.9[D] 1.7[E]	14.4[D] 37.1[E]	6.0 6.0
1991-1994	1.1[D] 1.9[E]	0.9[D] 1.7[E]	14.4[D] 37.1[E]	5.0 5.0
1995 ~~*and subsequent*~~ - *1997*	1.9[E]	1.7[E]	37.1[E]	5.0
1995-1997	*1.9[E]*	*1.7[E]*	*37.1[E]*	*2.5-0.5[F]*
1998 ~~and subsequent~~ - 2003	*1.9[E]*	*1.7[E]*	*37.1[E]*	*4.0*
1998 ~~and subsequent~~ - 2003	*1.9[E]*	*1.7[E]*	*37.1[E]*	*1.5-0.5[F]*
~~*2004 and subsequent*[G]~~	~~*0.7*~~	~~*0.5*~~	~~*14.4*~~	~~*2.0*~~

A The total or optional non-methane hydrocarbon standards apply to petroleum-fueled, natural-gas-fueled and liquified-petroleum-gas-fueled engines. The Organic Material Hydrocarbon Equivalent, or OMHCE, standards apply to methanol-fueled engines.

B Carbon Monoxide emissions from engines utilizing exhaust aftertreatment technology shall also not exceed 0.5 percent of the exhaust gas flow at curb idle.

C Manufacturers with existing heavy-duty otto-cycle engines certified to the California 1986 steady-state emission standards and test procedures may as an option certify those engines, for the 1987 model year only, in accordance with the standards and test procedures for 1986 heavy-duty otto-cycle engines established in Section 1956.7.

D These standards are applicable to otto-cycle engines intended for use in all heavy-duty vehicles.

E Applicable to heavy-duty otto-cycle engines intended for use only in vehicles with a gross vehicle weight rating greater than 14,000 pounds. Also, as an option, a manufacturer may certify one or more 1988-1994 otto-cycle heavy-duty engine configurations intended for use in all heavy-duty vehicles to these emission standards provided that the total model-year sales of such configurations(s) being certified to these emission standards represent no more than 5 percent of total model-year sales of all otto-cycle heavy-duty engines intended for use in vehicles with a Gross Vehicle Weight Rating of up to 14,000 pounds by the manufacturer.

F *These are optional standards and apply to all heavy-duty engines intended for use only in vehicles with a gross vehicle weight greater than 14,000 pounds. A manufacturer may elect to certify to an optional standard between the values, inclusive, by 0.5 grams per brake horsepower-hour increments.*

G ~~*Manufacturers may choose to certify incomplete medium-duty vehicles from 8,501-14,000 pounds gross vehicle weight to these emission standards as an alternative to the primary standards and test procedures specified in Section 1960.1, Title 13, CCR beginning with the 2004 model year. Manufacturers certifying medium-duty vehicles to these optional heavy-duty standards and test procedures shall specify, in the application for certification, an in-use compliance test procedure, as provided in Section 2139(e), Title 13, CCR.*~~

(2) [No Change]

(3) The exhaust emissions from new 2004 and subsequent model heavy-duty otto-cycle engines shall not exceed:

(a) Non-Methane Hydrocarbons plus Oxides of Nitrogen: 2.5 grams per brake horsepower-hour with non-methane hydrocarbons not to exceed 0.5 grams per brake horsepower-hour; or 2.4 grams per brake horsepower-hour;
(b) Carbon Monoxide: 14.4 grams per brake horsepower-hour.

(d) The test procedures for determining compliance with standards applicable to 1987 and subsequent model heavy-duty otto-cycle engines and vehicles are set forth in the "California Exhaust Emission Standards and Test Procedures for 1987 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles," adopted April 25, 1986, as last amended **[INSERT DATE OF ADOPTION]**, which is incorporated by reference herein.

(e) through (g) [No Change]

(h) The exhaust emissions from new 1992 and subsequent model-year engines used in incomplete medium-duty low-emission vehicles, ~~*and*~~ ultra-low-emission vehicles, ***and super-ultra-low-emission vehicles,*** and for diesel engines used in medium-duty low-emission vehicles, ~~*and*~~ ultra-low-emission vehicles ***and super-ultra-low-emission vehicles*** shall not exceed:

Exhaust Emission Standards for Engines Used in Incomplete Medium-Duty Low-Emission Vehicles ~~and~~ Ultra-Low-Emission Vehicles, and Super *Ultra*-Low-Emission Vehicles and for Diesel Engines Used in Medium-Duty Low-Emission Vehicles ~~and~~ Ultra-Low-Emission Vehicles, and Super *Ultra*-Low-Emission Vehicles[A,F]
(grams per brake horsepower-hour)

Model Year	Vehicle Emissions Category[B]	Carbon Monoxide	Non-Methane Hydrocarbons and Oxides of Nitrogen[C]		Formaldehyde	Particulates[D]
1992[E] ~~and subsequent~~ - 2001	LEV	14.4	3.5		0.050	0.10
2002-2003[E,H]	LEV	14.4	3.0		0.050	0.10
1992-2003[E,H]	ULEV	~~7.2~~ 14.4	2.5		0.025	~~0.05~~ 0.10
~~*2004 and subsequent*[G]~~	~~*ULEV*~~	~~*14.4*~~	~~*NMHC*~~	~~*NOx*~~	~~*0.050*~~	~~*0.10*~~
			~~*0.5*~~	~~*2.0*~~		
2004 and subsequent	***ULEV - Opt A.***	***14.4***	***2.5[G,I]***		***0.050***	***0.10***
2004 and subsequent	***ULEV - Opt. B***	***14.4***	***2.4[G,I]***		***0.050***	***0.10***
1992 and subsequent	SULEV	7.2	2.0		0.025	0.05

A. This set of standards is optional. Manufacturers of engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles from 8501-14,000 pounds, gross vehicle weight may choose to comply with these standards as an alternative to the primary emission standards and test procedures specified in section 1960.1, Title 13, California Code of Regulations. Manufacturers that choose to comply with these optional heavy-duty standards and test procedures shall specify, in the application for certification, an in-use compliance test procedure, as provided in section 2139(c), Title 13, California Code of Regulations.

B. "LEV" means low-emission vehicle.
"ULEV" means ultra-low-emission vehicle.
"SULEV" means super *ultra*-low-emission vehicle.

C. This standard is the sum of the individual non-methane hydrocarbon emissions and oxides of nitrogen emissions. For methanol-fueled engines, non-methane hydrocarbons shall mean organic material hydrocarbon equivalent ("OMHCE").

D. This standard shall only apply to diesel engines and vehicles.

E. Manufacturers may certify engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles to these standards to meet the requirements of section 1956.8(g), Title 13, California Code of Regulations.

F. In-use compliance testing shall be limited to vehicles or engines with fewer than 90,000 miles.

G. [The U.S. EPA is considering the adoption of federal emission standards for engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles. If the U.S. EPA promulgates a Final Rule establishing emission standards for this category, the ARB will hold a noticed public hearing within one year of such promulgation to consider the adoption of similar or identical standards in California.

H. For engines certified to the 3.5 grams per brake horsepower-hour (g/bhp-hr) LEV standards, the in-use compliance standard shall be 3.7 g/bhp-hr for the first two model years of introduction. For engines certified to the 2002 and 2003 model year LEV standards, the in-use compliance standard shall be 3.2 g/bhp-hr. For engines certified to the 1992 through 2003 model year ULEV standards, the in-use compliance standard shall be 2.7 g/bhp-hr for the first two model years of introduction. For engines certified to the 1992 and subsequent SULEV standards, the in-use compliance standard shall be 2.2 g/bhp-hr for the first two model years of introduction.

I. Manufacturers have the option of certifying to either option A or B. Manufacturers electing to certify to Option A must demonstrate that the NMHC emissions do not exceed 0.5 g/bhp-hr.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43103, 43104, and 43806, Health and Safety Code, and Vehicle Code section 28114. Reference: Sections 39002, 39003, 43000, 43013, 43018, 43100, 43101, 43101.5, 43102, 43103, 43104, 43106, 43204, and 43806, Health and Safety Code.

PROPOSED

SECTION 1960.1, TITLE 13, CCR

Amend Title 13, California Code of Regulations, section 1960.1 to read as follows[1]:

1960.1. Exhaust Emission Standards and Test Procedures - 1981 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.

(a) through (d) [No Change]

(e)(1) and (e)(2) [No Change]

---

[1] Modifications to the originally noticed text are designated by ***bold italics*** and ~~***bold strikeout***~~ to represent additions and deletions, respectively.

Date of Release: 10/20/95; 15-day changes
Board Hearing: 9/28/95

(e)(3) The exhaust emissions from new 1992 and subsequent model-year transitional low-emission vehicles, low-emission vehicles, ~~and~~ ultra-low-emission vehicles, and super low-emission vehicles, including fuel-flexible and dual-fuel vehicles, shall meet all the requirements of (g)(1) and (h)(2) with the following additions:

FORMALDEHYDE EXHAUST EMISSION STANDARDS FOR ~~TRANSITIONAL LOW-EMISSION VEHICLES, LOW-EMISSION VEHICLES, AND ULTRA-LOW-EMISSION VEHICLES~~ IN THE LIGHT-DUTY AND MEDIUM-DUTY VEHICLE WEIGHT CLASSES[5,6,7]

["milligrams per mile" (or "mg/mi")]

Vehicle Type[1]	*Vehicle Weight (lbs.)[2]*	*Durability Vehicle Basis (mi)*	*Vehicle Emission Category[3]*	*Formaldehyde (mg/mi)[4,5]*
PC and LDT	All 0-3750	50,000	TLEV	15 (23)
			LEV	15 (15)
			ULEV	8 (12)
		100,000	TLEV	18
			LEV	18
			ULEV	11
	3751-5750	50,000	TLEV	18 (27)
			LEV	18 (18)
			ULEV	9 (14)
		100,000	TLEV	23
			LEV	23
			ULEV	13
MDV	0-3750	50,000	LEV	15 (15)
			ULEV	8 (12)
		120,000	LEV	22
			ULEV	12
MDV	3751-5750	50,000	LEV	18 (18)
			ULEV	9 (14)
			SULEV	4 (7)
		120,000	LEV	27
			ULEV	13
			SULEV	6
MDV	5751-8500	50,000	LEV	22 (22)
			ULEV	11 (17)
			SULEV	6 (8)
		120,000	LEV	32
			ULEV	16
			SULEV	8

MDV	8501-10,000	50,000	LEV	28 (28)
			ULEV	14 (21)
			SULEV	7 (10)
		120,000	LEV	40
			ULEV	21
			SULEV	10
MDV	10,001-14,000	50,000	LEV	36 (36)
			ULEV	18 (27)
			SULEV	9 (14)
		120,000	LEV	52
			ULEV	26
			SULEV	13

(1) "PC" means passenger cars.
"LDT" means light-duty trucks.
"MDV" means medium-duty vehicles.

(2) For light-duty or medium-duty vehicles, Vehicle Weight shall mean "Loaded Vehicle Weight" (or "LVW") or "Test Weight" (or "TW"), respectively.

(3) "TLEV" means transitional low-emission vehicle.
"LEV" means low-emission vehicle.
"ULEV" means ultra-low-emission vehicle.
"SULEV" means super ***ultra***-low-emission vehicle.

(4) Formaldehyde exhaust emission standards apply to vehicles certified to operate on any available fuel, including fuel-flexible and dual-fuel vehicles.

(5) The standards in parentheses are intermediate in-use compliance standards for 50,000 miles.

a. For PCs and LDTs from 0-5750 lbs. LVW, including fuel-flexible and dual-fuel vehicles, intermediate in-use compliance standards shall apply to TLEVs through the 1995 model year, and LEVs and ULEVs through the 1998 model year. In-use compliance with standards beyond 50,000 miles shall be waived through 1995 for TLEVs, and through 1998 for LEVs and ULEVs.

b. For MDVs from 0-14,000 lbs. TW, including fuel-flexible and dual-fuel vehicles, intermediate in-use compliance standards shall apply to LEVs and ULEVs through the 1999 model year. In-use compliance with standards beyond 50,000 miles shall be waived through the 1999 model year for LEVs and ULEVs.

(6) Manufacturers shall demonstrate compliance with the above standards for formaldehyde at 50° F according to the procedures specified in section 11k of the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k). Hybrid electric, natural gas, and diesel-fueled vehicles shall be exempt from 50° F test requirements.

(7) In-use compliance testing shall be limited to PCs and LDTs with fewer than 75,000 miles and MDVs with fewer than 90,000 miles.

(f)(1) [No Change]

(f)(2) [No Change]

(g)(1) The exhaust emissions from new 1992 and subsequent model-year light-duty transitional low-emission vehicles, low-emission vehicles, and ultra-low-emission vehicles shall not exceed:

EXHAUST EMISSION STANDARDS FOR TRANSITIONAL LOW-EMISSION VEHICLES, LOW-EMISSION VEHICLES AND ULTRA-LOW-EMISSION VEHICLES IN PASSENGER CAR AND LIGHT-DUTY TRUCK VEHICLE CLASSES[6,7,8,9,10]

[grams per mile (or "g/mi")]

Vehicle Type[1]	*Loaded Vehicle Weight (lbs)*	*Durability Vehicle Basis(mi)*	*Vehicle Emission Category[2]*	*Non-Methane Organic Gases[3,4]*	*Carbon Monoxide*	*Oxides of Nitrogen[5]*
PC and LDT	All 0-3750	50,000	TLEV	0.125 (0.188)	3.4 (3.4)	0.4 (0.4)
			LEV	0.075 (0.100)	3.4 (3.4)	0.2 (0.3)
			ULEV	0.040 (0.058)	1.7 (2.6)	0.2 (0.3)
		100,000	TLEV	0.156	4.2	0.6
			LEV	0.090	4.2	0.3
			ULEV	0.055	2.1	0.3
LDT	3751-5750	50,000	TLEV	0.160 (0.238)	4.4 (4.4)	0.7 (0.7)
			LEV	0.100 (0.128)	4.4 (4.4)	0.4 (0.5)
			ULEV	0.050 (0.075)	2.2 (3.3)	0.4 (0.5)
		100,000	TLEV	0.200	5.5	0.9
			LEV	0.130	5.5	0.5
			ULEV	0.070	2.8	0.5

(1) "PC" means passenger cars.
"LDT" means light-duty trucks.
"LVW" means loaded vehicle weight.
"Non-Methane Organic Gases" or "NMOG" means the total mass of oxygenated and non-oxygenated hydrocarbon emissions.

(2) "TLEV" means transitional low-emission vehicle.
"LEV" means low-emission vehicle.
"ULEV" means ultra-low-emission vehicle.

(3) *Compliance with NMOG Standard* ~~"Non-Methane Organic Gases" (or "NMOG") shall mean the total mass of oxygenated and non-oxygenated hydrocarbon emissions.~~ To demonstrate compliance with an NMOG standard, NMOG emissions shall be measured in accordance with the "California Non-Methane Organic Gas Test Procedures" as adopted July 12, 1991 and last amended ~~September 22, 1993~~ [INSERT DATE OF ADOPTION], which is incorporated herein by reference.

a. *Reactivity Adjustment*. For TLEVs, LEVs, and ULEVs certified to operate exclusively on any fuel other than conventional gasoline, and for fuel-flexible and dual-fuel TLEVs, LEVs, and ULEVs when certifying on a fuel other than gasoline, manufacturers shall multiply NMOG exhaust certification levels by the applicable reactivity adjustment factor set forth in section 13 of the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k), or established by the Executive Officer pursuant to Appendix VIII of the foregoing test procedures. In addition, natural gas vehicles certifying to TLEV, LEV or ULEV standards shall calculate a reactivity-adjusted methane exhaust emission value by multiplying the methane exhaust certification level by the applicable methane reactivity adjustment factor set forth in section 13 of the above-referenced test procedures. The product of the NMOG exhaust certification levels and the reactivity adjustment factor shall be compared to the exhaust NMOG mass emission standards established for the particular vehicle emission category to determine compliance. For natural gas vehicles, the reactivity-adjusted NMOG value shall be added to the reactivity-adjusted methane value and then compared to the exhaust NMOG mass emission standards established for the particular vehicle emission category to determine compliance.

ab. *Fleet Average Requirement*. Each manufacturer shall certify PCs or LDTs to meet the exhaust mass emission standards for TLEVs, LEVs, ULEVs, or the exhaust emission standards of sections 1960.1 (e)(1), 1960.1 (f)(1), or 1960.1 (f)(2), Title 13, California Code of Regulations, or as Zero-Emission Vehicles, such that the manufacturer's fleet average NMOG values for California-certified PCs and LDTs from 0-3750 lbs. ~~"Loaded Vehicle Weight" (or "LVW")~~, and LDTs from 3751-5750 lbs. LVW produced and delivered for sale in California are less than or equal to the requirement for the corresponding Model Year, Vehicle Type, and LVW Class in section 1960.1 (g)(2), Title 13, California Code of Regulations.

(4) *NMOG Standards for Fuel-Flexible and Dual-Fuel Vehicles*. Fuel-flexible and dual-fuel PCs and LDTs from 0-5750 lbs. LVW shall be certified to exhaust mass emission standards for NMOG established for the operation of the vehicle on any available fuel other than gasoline, and gasoline.

a. *Reactivity Adjustment*. For TLEVs, LEVs, and ULEVs, when certifying for operation on a fuel other than gasoline, manufacturers shall multiply exhaust NMOG certification levels by the applicable reactivity adjustment factor. In addition to multiplying the exhaust NMOG certification levels by the applicable reactivity adjustment factor, natural gas vehicles shall multiply the exhaust methane certification level by the applicable methane reactivity adjustment factor and add that value to the reactivity-adjusted NMOG value. The exhaust NMOG certification levels for fuel-flexible or dual-fuel vehicles when certifying on gasoline shall not be multiplied by a reactivity adjustment factor.

b. *Standards of Fuel-Flexible and Dual-Fuel Vehicles Operating on Gasoline*. For PCs and LDTs from 0-~~3750~~ 5750 lbs. LVW, the applicable exhaust mass emission standard for NMOG when certifying the vehicle for operation on gasoline shall be:

Vehicle Type	Loaded Vehicle Weight (LVW)	Emission Category	Durability Vehicle Basis (g/mi)	
			50,000 Mile	100,000 Mile
PCs, LDT	All, 0-3750	TLEV	0.25	0.31
		LEV	0.125	0.156
		ULEV	0.075	0.090
LDT	3751-5750	TLEV	0.32	0.40
		LEV	0.160	0.200
		ULEV	0.100	0.130

~~(i) For TLEVs, 0.25 g/mi and 0.31 g/mi for 50,000 and 100,000 miles, respectively.~~

~~(ii) For LEVs, 0.125 g/mi and 0.156 g/mi for 50,000 and 100,000 miles, respectively.~~

~~(iii) For ULEVs, 0.075 g/mi and 0.090 g/mi for 50,000 and 100,000 miles, respectively.~~

~~e. For LDTs from 3751-5750 lbs. LVW, the applicable exhaust mass emission standard for NMOG when certifying the vehicle for operation on gasoline shall be:~~

~~(i) For TLEVs, 0.32 g/mi and 0.40 g/mi for 50,000 and 100,000 miles, respectively.~~

~~(ii) For LEVs, 0.160 g/mi and 0.200 g/mi for 50,000 and 100,000 miles, respectively.~~

~~(iii) For ULEVs, 0.100 g/mi and 0.130 g/mi for 50,000 and 100,000 miles, respectively.~~

(5) *Highway NOx*. The maximum projected emissions of "Oxides of Nitrogen" (or "NOx") measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR 600 Subpart B) shall be not greater than 1.33 times the applicable light-duty vehicle standards shown in the table. Both the projected emissions and the HWFET standard shall be rounded in accordance with ASTM E29-67 to the nearest 0.1 g/mi before being compared.

(6) *Intermediate In-Use Compliance Standards*. The following standards ~~in parentheses~~ are intermediate in-use compliance standards for 50,000 miles and 100,000 f~~F~~or PCs and LDTs from 0-5750 lbs. LVW, including fuel-flexible and dual-fuel vehicles when operating on any available fuel other than gasoline.~~,~~ ~~I~~intermediate in-use compliance standards shall apply to TLEVs through the 1995 model year as follows: ~~, and LEVs and ULEVs through the 1998 model year~~.

	NMOG (g/mi)
PCs and LDTs 0-3750 lbs. LVW	0.188
LDTs 3751-5750 lbs. LVW	0.238

In-use compliance with standards beyond 50,000 miles shall be waived through the 1995 model year for TLEVs, and through the 1998 model year for LEVs and ULEVs. For LEVs and ULEVs, the following intermediate in-use standards shall apply:

Vehicle Type	Durability Vehicle Basis	LEV (g/mi)			ULEV (g/mi)			
		Model Year	NMOG	NOx	Model Year	NMOG	CO	NOx
PCs, 0-3750 lb. LVW LDTs	50,000	through 1998	0.100	0.3	through 1998	0.058	2.6	0.3
	50,000	1999	~~0.090~~ 0.100	0.3	1999-2002	0.055	2.1	0.3
	100,000		0.125	0.4	1999-2002	0.075	3.4	0.4
3751-5750 lb. LVW LDTs	50,000	through 1998	0.128	0.5	through 1998	0.075	3.3	0.5
	50,000	1999	0.130	0.5	1999-2002	0.070	2.8	0.5
	100,000		0.160	0.7	1999-2002	0.100	4.4	0.7

a. *Reactivity Adjustment*. For TLEVs, LEVs, and ULEVs designed to operate on any fuel other than conventional gasoline, including fuel-flexible and dual-fuel vehicles when operating on any fuel other than gasoline, exhaust NMOG mass emission results shall be multiplied by the applicable reactivity adjustment factor to determine compliance with intermediate in-use compliance standards for NMOG. In addition to multiplying the exhaust NMOG emission results by the applicable reactivity adjustment factor, ~~natural gas vehicles shall multiply~~ the exhaust methane emission results for natural gas vehicles shall be multiplied by the applicable methane reactivity adjustment factor and the resulting value shall be added ~~add that value~~ to the reactivity-adjusted NMOG value. Exhaust NMOG mass emissions from fuel-flexible or dual-fuel vehicles when operating on gasoline shall not be multiplied by a reactivity adjustment factor.

b. *Intermediate In-Use Standards for Fuel-Flexible and Dual-Fuel Vehicles Operating on Gasoline*. For fuel-flexible and dual-fuel PCs and LDTs from 0-~~3750~~ 5750 lbs. LVW, intermediate in-use compliance standards for NMOG emissions at 50,000 miles when the vehicle is operated on gasoline shall be:

Vehicle Type	Loaded Vehicle Weight (LVW)	Emission Category	Durability Vehicle Basis (g/mi) 50,000 mi
PCs, LDT	All, 0-3750	TLEV	0.32
		LEV	0.188
		ULEV	0.100
LDT	3751-5750	TLEV	0.41
		LEV	0.238

		ULEV	0.128

Intermediate in-use compliance standards shall apply to TLEVs through the 1995 model year, and to LEVs and ULEVs through the 1998 model year. In-use compliance with standards beyond 50,000 miles shall be waived through the 1995 model year for TLEVs and through the 1998 model year for LEVs and ULEVs.

~~0.32 g/mi, 0.188 g/mi, and 0.100 g/mi for TLEVs, LEVs, and ULEVs, respectively.~~

~~e. For fuel flexible and dual fuel LDTs from 3751-5750 lbs. LVW, intermediate in-use compliance standards for NMOG emissions at 50,000 miles, when the vehicle is operated on gasoline, shall be 0.41 g/mi, 0.238 g/mi, and 0.128 g/mi for TLEVs, LEVs, and ULEVs, respectively.~~

(7) *Diesel Standards*. Manufacturers of diesel vehicles shall also certify to particulate standards at 100,000 miles. For all PCs and LDTs from 0-~~5750~~ 3750 lbs. LVW, the particulate standard is 0.08 g/mi, 0.08 g/mi, and 0.04 g/mi for TLEVs, LEVs, and ULEVs, respectively. For LDTs from 3751-5750 lbs. LVW, the particulate standard is 0.10 g/mi, 0.10 g/mi, and 0.05 g/mi for TLEVs, LEVs and ULEVs, respectively. For diesel vehicles certifying to the standards set forth in Title 13, section 1960.1(g)(1), "NMOG" shall mean non-methane hydrocarbons.

(8) *50°F Requirement*. Manufacturers shall demonstrate compliance with the above standards for NMOG, CO, and NOx at 50° F according to the procedure specified in section 11k of the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k). Hybrid electric, natural gas and diesel-fueled vehicles shall be exempt from 50° F test requirements.

(9) *Limit on In-Use Testing*. In-use compliance testing shall be limited to vehicles with fewer than 75,000 miles.

(10) *HEV Requirements*. Deterioration factors for hybrid electric vehicles shall be based on the emissions and mileage accumulation of the auxiliary power unit. For certification purposes only, Type A hybrid electric vehicles shall demonstrate compliance with 50,000 mile emission standards (using 50,000 mile deterioration factors), and demonstrating compliance with 100,000 mile emission standards shall not be required. For certification purposes only, Type B hybrid electric vehicles shall demonstrate compliance with 50,000 mile emission standards (using 50,000 mile deterioration factors) and 100,000 mile emission standards (using 75,000 mile deterioration factors). For certification purposes only, Type C hybrid electric vehicles shall demonstrate compliance with 50,000 mile emission standards (using 50,000 mile deterioration factors) and 100,000 mile emission standards (using 100,000 mile deterioration factors).

(g)(2) [No Change]

(h)(1) [No Change]

(h)(2) The exhaust emissions from new 1992 and subsequent model-year medium-duty low-emission vehicles, ~~and~~ ultra-low-emission vehicles, and super ***ultra***-low-emission vehicles shall not exceed:

EXHAUST EMISSION STANDARDS FOR LOW-EMISSION VEHICLES, ~~AND~~ ULTRA-LOW EMISSION VEHICLES AND SUPER-*ULTRA*-LOW-EMISSION VEHICLES IN THE MEDIUM-DUTY VEHICLE WEIGHT CLASS[8,9,10,11,12,14,15,16]

[grams per mile (or "g/mi")]

Test Weight (lbs)[1]	Durability Vehicle Basis (mi)	Vehicle Emission Category[2]	Non-Methane Organic Gases[1,3,4]	Carbon Monoxide	Oxides of Nitrogen[5]	Particulates[6,7]
0-3750	50,000	LEV	0.125 ~~(0.188)~~	3.4 ~~(3.4)~~	0.4 ~~(0.4)~~	n/a
		ULEV	0.075 ~~(0.100)~~	1.7 ~~(2.6)~~	0.2 ~~(0.3)~~	n/a
	120,000	LEV	0.180	5.0	0.6	0.08
		ULEV	0.107	2.5	0.3	0.04
3751-5750	50,000	LEV	0.160 ~~(0.238)~~	4.4 ~~(4.4)~~	~~0.7~~ 0.4	n/a
		ULEV	0.100 ~~(0.128)~~	~~2.2 (3.3)~~ 4.4	0.4 ~~(0.5)~~	n/a
		SULEV	0.050	2.2	0.2	n/a
	120,000	LEV	0.230	6.4	~~1.0~~ 0.6	0.10
		ULEV	0.143	~~3.2~~ 6.4	~~0.5~~ 0.6	0.05
		SULEV	0.072	3.2	0.3	0.05
5751-8500	50,000	LEV	0.195 ~~(0.293)~~	5.0 ~~(5.0)~~	~~1.1~~ 0.6	n/a
		ULEV	0.117 ~~(0.156)~~	~~2.5 (3.8)~~ 5.0	0.6 ~~(0.8)~~	n/a
		SULEV	0.059	2.5	0.3	n/a
	120,000	LEV	0.280	7.3	~~1.5~~ 0.9	0.12
		ULEV	0.167	~~3.7~~ 7.3	~~0.8~~ 0.9	0.06
		SULEV	0.084	3.7	0.45	0.06
8501-10,000	50,000	LEV	0.230 ~~(0.345)~~	5.5 ~~(5.5)~~	~~1.3~~ 0.7	n/a
		ULEV	0.138 ~~(0.184)~~	~~2.8 (4.2)~~ 5.5	0.7 ~~(1.0)~~	n/a
		SULEV	0.070	2.8	0.35	n/a
	120,000	LEV	0.330	8.1	~~1.8~~ 1.0	0.12
		ULEV	0.197	~~4.1~~ 8.1	~~0.9~~ 1.0	0.06
		SULEV	0.100	4.1	0.5	0.06
10,001-14,000	50,000	LEV	0.300 ~~(0.450)~~	7.0 ~~(7.0)~~	~~2.0~~ 1.0	n/a
		ULEV	0.180 ~~(0.240)~~	~~3.5 (5.3)~~ 7.0	1.0 ~~(1.5)~~	n/a
		SULEV	0.09	3.5	0.5	n/a
	120,000	LEV	0.430	10.3	~~2.8~~ 1.5	0.12
		ULEV	0.257	~~5.2~~ 10.3	~~1.4~~ 1.5	0.06
		SULEV	0.130	5.2	0.7	0.06

(1) "Test Weight" (or "TW") shall mean the average of the vehicle's curb weight and gross vehicle weight.

"Non-Methane Organic Gases" (or "NMOG") means the total mass of oxygenated and non-oxygenated hydrocarbon emissions.

(2) "LEV" means low-emission vehicle.

"ULEV" means ultra-low-emission vehicle.

"SULEV" means super-*ultra*-low-emission vehicle.

(3) *Compliance with NMOG Standards*. ~~"Non Methane Organic Gases" (or "NMOG") shall mean the total mass of oxygenated and non-oxygenated hydrocarbon emissions.~~ To determine compliance with an NMOG standard, NMOG emissions shall be measured in accordance with "California Non-Methane Organic Gas Test Procedures" ~~as~~ adopted July 12, 1991 and last amended ~~September 22, 1993~~ _____ which is incorporated herein by reference.

a. *Reactivity Adjustment*. For LEVs and ULEVs certified to operate on an available fuel other than conventional gasoline, including fuel-flexible or dual-fuel vehicles when certifying on a fuel other than ~~conventional~~ gasoline, manufacturers shall multiply the NMOG exhaust certification levels by the applicable reactivity adjustment factor set forth in Section 13 of the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k), or established by the Executive Officer pursuant to Appendix VIII of the foregoing test procedures. In addition, natural gas vehicles certifying to LEV or ULEV standards shall calculate a reactivity-adjusted methane exhaust emission value by multiplying the methane exhaust certification level by the applicable methane reactivity adjustment factor set forth in section 13 of the above-referenced test procedures. The product of the exhaust NMOG certification levels and the reactivity adjustment factor shall be compared to the exhaust NMOG mass emission standard established for the particular vehicle emission category to determine compliance. For natural gas vehicles, the reactivity-adjusted NMOG value shall be added to the reactivity-adjusted methane value and then compared to the exhaust NMOG mass emission standards established for the particular vehicle emission category to determine compliance.

b. Prior to the 1998 model year, the LEV exhaust mass emission standard for NOx shall be 0.7 g/mi for MDVs from 3751-5750 lbs. TW, 1.1 g/mi for MDVs from 5751-8500 lbs. TW, 1.3 g/mi for MDVs from 8501-10,000 lbs. TW and 2.0 g/mi for MDVs from 10,001-14,000 lbs. TW.

(4) *NMOG Standards for Fuel-Flexible and Dual-Fuel Vehicles*. Fuel-flexible and dual-fuel "Medium-Duty Vehicles" (or "MDVs") from 0-14,000 lbs. TW shall be certified to exhaust mass emission standards for NMOG established for the operation of the vehicle on a fuel other than gasoline, and gasoline.

a. *Reactivity Adjustment*. For LEVs and ULEVs when certifying on the fuel other than gasoline, manufacturers shall multiply the exhaust NMOG certification levels by the applicable reactivity adjustment factor. In addition to multiplying the exhaust NMOG certification levels by the applicable reactivity adjustment factor, ~~natural gas vehicles shall multiply~~ the exhaust methane certification level for natural gas vehicles shall be multiplied by the applicable methane reactivity adjustment factor

and the resulting value shall be added ~~add that value~~ to the reactivity-adjusted NMOG value. When certifying on gasoline, the exhaust NMOG certification levels of fuel-flexible and dual-fuel vehicles shall not be multiplied by a reactivity adjustment factor.

b. *Standards for Fuel-Flexible and Dual-Fuel Vehicles Operating on Gasoline*. For MDVs from 0-~~3750~~ 14,000 lbs. TW, the applicable exhaust mass emission standard for NMOG when certifying the vehicle for operation on gasoline shall be:

Test Weight (lbs.)	Vehicle Emission Category	50,000 (g/mi)	120,000 (g/mi)
0-3750	LEV	0.25	0.36
	ULEV	0.125	0.180
3751-5750	LEV	0.32	0.46
	ULEV	0.160	0.230
	SULEV	0.100	0.143
5751-8500	LEV	0.39	0.56
	ULEV	0.195	0.280
	SULEV	0.117	0.167
8501-10,000	LEV	0.46	0.66
	ULEV	0.230	0.330
	SULEV	0.138	0.197
10,001-14,000	LEV	0.60	0.86
	ULEV	0.300	0.430
	SULEV	0.180	0.257

~~(i) For LEVs, 0.25 g/mi and 0.36 g/mi for 50,000 and 120,000 miles, respectively.~~

~~(ii) For ULEVs, 0.125 g/mi and 0.180 g/mi for 50,000 and 120,000 miles, respectively.~~

~~c. For MDVs from 3751-5750 lbs. TW, the applicable exhaust mass emission standard for NMOG when certifying the vehicle for operation on gasoline shall be:~~

~~(i) For LEVs, 0.32 g/mi and 0.46 g/mi for 50,000 and 120,000 miles, respectively.~~

~~(ii) For ULEVs, 0.160 g/mi and 0.230 g/mi for 50,000 and 120,000 miles, respectively.~~

~~d. For MDVs from 5751-8500 lbs. TW, the applicable exhaust mass emission standard for NMOG when certifying the vehicle for operation on gasoline shall be:~~

~~(i) For LEVs, 0.39 g/mi and 0.56 g/mi for 50,000 and 120,000 miles, respectively.~~

~~(ii) For ULEVs, 0.195 g/mi and 0.280 g/mi for 50,000 and 120,000 miles, respectively.~~

~~c. For MDVs from 8501-10,000 lbs. TW, the applicable exhaust mass emission standard for NMOG when certifying the vehicle for operation on gasoline shall be:~~

~~(i) For LEVs, 0.46 g/mi and 0.66 g/mi for 50,000 and 120,000 miles, respectively.~~

~~(ii) For ULEVs, 0.230 g/mi and 0.330 g/mi for 50,000 and 120,000 miles, respectively.~~

~~d. For MDVs from 10,001-14,000 lbs. TW, the applicable exhaust mass emission standard for NMOG when certifying the vehicle for operation on gasoline shall be:~~

~~(i) For LEVs, 0.60 g/mi and 0.86 g/mi for 50,000 and 120,000 miles, respectively.~~

~~(ii) For ULEVs, 0.300 g/mi and 0.430 g/mi for 50,000 and 120,000 miles, respectively.~~

(5) *Highway NOx*. The maximum projected emissions of "Oxides of Nitrogen" (or "NOx") measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR Part 600 Subpart B) shall not be greater than 2.00 times the applicable MDV standards shown in the table. Both the projected emissions and the HWFET standard shall be rounded in accordance with ASTM E29-67 to the nearest 0.1 g/mi before being compared.

(6) Particulate standards are only applicable for diesel vehicles and shall be determined on a 120,000 mile basis.

(7) "n/a" means not applicable.

(8) *Certification of Incomplete and Diesel Vehicles*. Manufacturers have the option of certifying engines used in incomplete and diesel MDVs to the heavy-duty engine standards and test procedures set forth in Section 1956.8(g) or (h), Title 13, California Code of Regulations. Manufacturers certifying incomplete or diesel MDVs to the heavy-duty engine standards and test procedures shall specify in the application for certification an in-use compliance procedure as provided in Section 2139(c), Title 13, California Code of Regulations. For diesel vehicles certifying to the standards set forth in Title 13, section 1960.1(h)(2), "NMOG" shall mean non-methane hydrocarbons.

(9) *Intermediate In-Use Compliance Standards*. Beginning with the 1998 model year, t~~T~~he following standards ~~in parentheses are~~ intermediate in-use compliance standards for 50,000 miles and 120,000 miles for ~~For~~ MDVs from 0-14,000 lbs. TW, including fuel-flexible and dual-fuel vehicles when operating on ~~any~~ an available fuel other than gasoline shall apply: ~~intermediate in-use compliance standards shall apply to LEVs and ULEVs through the 1999 model year~~.

Intermediate In-Use Compliance Standards										
Emission Category	Model Year	Durability Vehicle Basis (mi)	3751-5750 lbs.		5751-8500 lbs.		8501-10,000 lbs.		10,001-14,000 lbs.	
			NMOG (g/mi)	NOx* (g/mi)	NMOG (g/mi)	NOx* (g/mi)	NMOG (g/mi)	NOx* (g/mi)	NMOG (g/mi)	NOx* (g/mi)
LEV	through 1999	50,000	0.238	0.6	0.293	0.9	0.345	1.0	0.450	1.5
	2000	50,000	--	0.6	--	0.9	--	1.0	--	1.5
		120,000	--	0.8	--	1.2	--	1.3	--	2.0
ULEV	through 1999	50,000	0.128	0.6	0.156	0.9	0.184	1.0	0.240	1.5
	2000-2002	50,000	0.128	0.6	0.156	0.9	0.184	1.0	0.240	1.5
		120,000	0.160	0.8	0.195	1.2	0.230	1.3	0.300	2.0
SULEV	*through 2002*	***50,000***	***0.072***	***0.3***	***0.084***	***0.45***	***0.100***	***0.5***	***0.130***	***0.7***
		120,000	***0.100***		***0.117***		***0.138***		***0.180***	

In-use compliance with the standards beyond 50,000 miles shall be waived through the 1999 model year for LEVs and ULEVs and through the 2001 model year for SULEVs.

*Intermediate in-use NOx standards shall only apply to the 1998, 1999 and 2000 model year MDVs.

a. *Reactivity Adjustment*. For LEVs and ULEVs designed to operate on an available fuel other than conventional gasoline, including fuel-flexible and dual-fuel vehicles when operating on an available fuel other than gasoline, NMOG exhaust mass emission results shall be multiplied by the applicable reactivity adjustment factor to determine compliance with intermediate in-use compliance standards for NMOG. In addition to multiplying the exhaust NMOG mass emission results ~~levels~~ by the applicable reactivity adjustment factor, natural gas vehicles shall multiply the exhaust methane mass emission results ~~level~~ by the applicable methane reactivity adjustment factor and add that value to the reactivity-adjusted NMOG value. For fuel-flexible and dual-fuel vehicles when operating on gasoline, NMOG emission results shall not be multiplied by a reactivity adjustment factor.

b. *Gasoline Standards for Fuel-Flexible and Dual-Fuel Vehicles*. For fuel-flexible and dual-fuel MDVs from 0-~~3750~~ 14,000 lbs. TW, intermediate in-use compliance standards for NMOG emissions at 50,000 miles, when the vehicle is operated on gasoline, shall be:

Fuel-Flexible and Dual-Fuel MDVs Intermediate In-Use Compliance Standards		
Test Weight (lbs.)	Vehicle Emission Category	50,000 (g/mi)
0-3750	LEV	0.32

	ULEV	0.188
3751-5750	LEV	0.41
	ULEV	0.238
	SULEV	0.128
5751-8500	LEV	0.49
	ULEV	0.293
	SULEV	0.156
8501-10,000	LEV	0.58
	ULEV	0.345
	SULEV	0.184
10,001-14,000	LEV	0.75
	ULEV	0.450
	SULEV	0.240

Intermediate in-use compliance standards shall apply to LEVs and ULEVs through the 1999 model year and to SULEVs through the ~~2005~~ ***2001*** model year. Compliance with the standards beyond 50,000 miles shall be waived through the 1999 model year for LEVs and ULEVs through the 2001 model year for SULEVs. ~~0.32 g/mi and 0.188 g/mi for LEVs and ULEVs, respectively.~~

~~e. For fuel flexible and dual fuel MDVs from 3751-5750 lbs. TW, intermediate in use compliance standards for NMOG emissions at 50,000 miles, when the vehicle is operated on gasoline, shall be 0.41 g/mi and 0.238 g/mi for LEVs and ULEVs, respectively.~~

~~d. For fuel flexible and dual fuel MDVs from 5751-8500 lbs. TW, intermediate in use compliance standards for NMOG emissions at 50,000 miles, when the vehicle is operated on gasoline, shall be 0.49 g/mi and 0.293 g/mi for LEVs and ULEVs, respectively.~~

~~e. For fuel flexible and dual fuel MDVs from 8501-10,000 lbs. TW, intermediate in use compliance standards for NMOG emissions at 50,000 miles, when the vehicle is operated on conventional gasoline, shall be 0.58 g/mi and 0.345 g/mi for LEVs and ULEVs, respectively.~~

~~f. For fuel flexible and dual fuel MDVs from 10,001-14,000 lbs. TW, intermediate compliance standards for NMOG emissions at 50,000 miles, when the vehicle is operated on gasoline, shall be 0.75 g/mi and 0.450 g/mi for LEVs and ULEVs, respectively~~.

(10) *Medium-Duty Vehicle Phase-In Requirements*. Each manufacturer's MDV fleet shall be defined as the total number of California certified MDVs from 0-14,000 lbs. TW produced and delivered for sale in California.

a. Manufacturers of MDVs shall certify an equivalent percentage of ~~25% of~~ their MDV fleet ~~to~~ according to the following phase-in schedule: ~~LEV standards in the 1998 model year, 50% of their MDV fleet to LEV standards in the 1999 model year, 75% of their MDV fleet to LEV standards in the 2000 model year, 95% of their MDV fleet to LEV standards in the 2001 model year, 90% of their MDV fleet to LEV standards in the 2002 model year, and 85% of their MDV fleet to LEV standards in the 2003 and subsequent model years.~~

~~b. Manufacturers of MDVs shall certify an equivalent of 2% of their MDV fleet to ULEV standards in each model year from 1998 to 2000, 5% of their MDV fleet to ULEV standards in the 2001 model year, 10% of their MDV fleet to ULEV standards in the 2002 model year, and 15% of their MDV fleet to ULEV standards in the 2003 and subsequent model years.~~

Model Year	Vehicles Certified to Title 13 CCR Section 1960.1(h)(1) or (h)(2) (%)			Vehicles Certified to Title 13 CCR Section 1956.8(g) or (h) (%)		
	Tier 1	LEV	ULEV	Tier 1	LEV	ULEV
1998	73	25	2	100	0	0
1999	48	50	2	100	0	0
2000	23	75	2	100	0	0
2001	0	80	20	100	0	0
2002	0	70	30	0	100	0
2003	0	60	40	0	100	0
2004 +	0	60	40	0	0	100

c. The percentages shall be applied to the manufacturers' total production of California-certified medium-duty vehicles delivered for sale in California.

d. These requirements shall not apply to small volume manufacturers. Small volume manufacturers shall comply with the requirements of note (16) below.

(11) *Definition of HEV*. For the purpose of calculating "Vehicle Equivalent Credits" (or "VECs"), the contribution of hybrid electric vehicles (or "HEVs") will be calculated based on the range of the HEV without the use of the engine. For purpose of calculating the contribution of HEVs to the VECs, the following definitions shall apply:

"*Type A HEV*" shall mean an HEV which achieves a minimum range of 60 miles over the All-Electric Range Test as defined in "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k).

"*Type B HEV*" shall mean an HEV which achieves a range of 40 - 59 miles over the All-Electric Range Test as defined in "California Exhaust Emission Standards

and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k).

"*Type C HEV*" shall mean an HEV which achieves a range of 0 - 39 miles over the All-Electric Range Test and all other HEVs excluding "Type A" and "Type B" HEVs as defined in "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k).

a. For the purpose of calculating VECs, electric vehicles which utilize fuel fired heaters and which are not otherwise certified as ZEVs shall be treated as "Type A HEV ULEVs."

(12) *Calculation of Vehicle Equivalent Credits*. In 1992 and subsequent model years, manufacturers that produce and deliver for sale in California MDVs in excess of the equivalent requirements for LEVs and/or ULEVs certified to the exhaust emission standards set forth in this section (h)(2) or Title 13, CCR Section 1956.8(h), shall receive VECs calculated in accordance with the following equation, where the term "Produced" means produced and delivered for sale in California:

{[(No. of LEVs Produced excluding HEVs) + (No. of "Type C HEV" LEVs Produced)] +
[(No. of "Type A HEV" LEVs Produced) x (1.2)] +
[(No of "Type B HEV" LEVs Produced) x (1.1)] -
(Equivalent No. of LEVs Required to be Produced)} +
{(1.4) x [(No. of ULEVs Produced excluding HEVs) + (No. of "Type C HEV" ULEVs Produced)] +
[(1.7) x (No. of "Type A HEV" ULEVs Produced)] +
[(1.5) x (No. of "Type B HEV" ULEVs Produced)] -
[(1.4) x (Equivalent No. of ULEVs Required to be Produced)]} +
{[(1.7) x [(No. of *SU*LEVs Produced excluding HEVs) + (No. of "Type C HEV" *SU*LEVs Produced)] +
[(No. of "Type A HEV" *SU*LEVs Produced) x (1.7)] +
[No. of "Type B HEV" *SU*LEVs) x (1.5)] -
[(1.7) x [(Equivalent No. of *SU*LEVs Required to be Produced)]} +
[(2.0) x (No. of ZEVs Certified and Produced as MDVs)].

a. Manufacturers which fail to produce and deliver for sale in California the equivalent quantity of MDVs certified to LEV and/or ULEV exhaust emission standards, shall receive "Vehicle-Equivalent Debits" (or "VEDs") equal to the amount of negative VECs determined by the aforementioned equation.

b. Manufacturers shall equalize emission debits within one model year by earning VECs in an amount equal to their previous model-year's total of VEDs, or by submitting a commensurate amount of VECs to the Executive Officer that were earned previously or acquired from another manufacturer. Any manufacturer which fails to equalize emission debits within the specified time period shall be subject to the Health and Safety Code civil penalty applicable to a manufacturer which sells a new motor vehicle that does not meet the applicable emission standards adopted by the

state board. The cause of action shall be deemed to accrue when the emission debits are not equalized by the end of the specified time period. For the purposes of Health and Safety Code section 43211, the number of vehicles not meeting the state board's emission standards shall be equal to the amount of VEDs incurred.

c. The VECs earned in any given model year shall retain full value through the subsequent model year.

d. The value of any VECs not used to equalize the previous model-year's debit, shall be discounted by 50% at the beginning of second model year after being earned, discounted to 25% of its original value if not used by the beginning of the third model year after being earned, and will have no value if not used by the beginning of the fourth model year after being earned.

e. Any VECs earned prior to the 1998 model year shall be treated as earned in the 1998 model year and discounted in accordance with the schedule specified in note (12)(d).

f. Only ZEVs certified as MDVs shall be included in the calculation of VECs.

g. In order to verify the status of a manufacturer's compliance with the phase-in requirements of this section and in order to confirm the accrual of VECs or VEDs, each manufacturer shall submit an annual report to the Executive Officer which sets forth the production data used to establish compliance by no later than March 1 of the calendar year following the close of the model year.

(13) *50° F Requirement*. Manufacturers shall demonstrate compliance with the above standards for NMOG, carbon monoxide, and oxides of nitrogen at 50° F, according to the procedure specified in Section 11k of the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k). Hybrid electric, natural gas and diesel-fueled vehicles are exempt from 50° F test requirements.

(14) In-use compliance testing shall be limited to vehicles with fewer than 90,000 miles.

(15) *HEV Requirements*. Deterioration factors for hybrid electric vehicles shall be based on the emissions and mileage accumulation of the auxiliary power unit. For certification purposes only, Type A hybrid electric vehicles shall demonstrate compliance with 50,000 mile emission standards (using 50,000 mile deterioration factors), and demonstrating compliance with 120,000 mile emission standards shall not be required. For certification purposes only, Type B hybrid electric vehicles shall demonstrate compliance with 50,000 mile emission standards (using 50,000 mile deterioration factors) and 120,000 mile emission standards (using 90,000 mile deterioration factors). For certification purposes only, Type C hybrid electric vehicles shall demonstrate compliance with 50,000 mile emission standards (using 50,000 mile deterioration factors) and 120,000 mile emission standards (using 120,000 mile deterioration factors).

(16) *Requirements for Small Volume Manufacturers*. As used in Section 1960.1(h)(2), the term "small volume manufacturer" shall mean any vehicle manufacturer with California sales less than or equal to 3000 new PCs, LDTs, and MDVs per model year based on the average number of vehicles sold by the manufacturer each model year from 1992 to 1994, except as otherwise noted below. For manufacturers

certifying for the first time in California, model-year sales shall be based on projected California sales. In 2001 and subsequent model years, small volume manufacturers shall comply with the requirements set forth below.

a. Prior to the model year 2001, small volume manufacturers shall not be required to certify, produce, or deliver LEVs and ULEVs for sale in California.

b. In 2001 and subsequent model years, small volume manufacturers shall certify, produce, and deliver for sale in California LEVs in a quantity equivalent to 100% of their MDV fleet.

c. If a manufacturer's average California sales exceeds 3000 units of new PCs, LDTs, and MDVs based on the average number of vehicles sold for any three consecutive model years, the manufacturer shall no longer be treated as a small volume manufacturer and shall comply with the LEV and ULEV requirements applicable for larger manufacturers as specified in Section 1960.1(h)(2) beginning with the fourth model year after the last of the three consecutive model years.

d. If a manufacturer's average California sales falls below 3000 units of new PCs, LDTs, and MDVs based on the average number of vehicles sold for any three consecutive model years, the manufacturer shall be treated as a small volume manufacturer and shall be subject to requirements for small volume manufacturers as specified in Section 1960.1(h)(2) beginning with the next model year.

(i) and (j) [No Change]

(k) The test procedures for determining compliance with these standards are set forth in "California Exhaust Emission Standards and Test Procedures for 1981 through 1987 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," adopted by the state board on November 23, 1976, as last amended May 20, 1987, and in "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," adopted by the state board on May 20, 1987, as last amended ~~September 22, 1993~~**[INSERT DATE OF ADOPTION]**, both of which are incorporated herein by reference.

(l) With respect to any new vehicle required to comply with the standards set forth in paragraphs (a) through (~~f~~h), the manufacturer's written maintenance instructions for in-use vehicles shall not require scheduled maintenance more frequently than or beyond the scope of maintenance permitted under the test procedures referenced in paragraph (k) above. Any failure to perform scheduled maintenance shall not excuse an emissions violation unless the failure is related to or causative of the violation.

(m) through (p) [No Change]

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43104, and 43105, Health and Safety Code. Reference: Sections 39002, 39003, 39667, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43103, 43104, 43105, 43106, 43107, and 43204-43205.5, Health and Safety Code.

PROPOSED

SECTION 1965, TITLE 13, CCR

Amend Section 1965, Title 13, California Code of Regulations to read as follows:

Section 1965. Emission Control and Smog Index Labels - 1979 and Subsequent Model-Year Motor Vehicles.

In addition to all other requirements, emission control labels required by California certification procedures and smog index labels ~~***required by Health and Safety Code Section 43200.5***~~ shall conform to the "California Motor Vehicle Emission Control and Smog Index Label Specifications," adopted March 1, 1978, as last amended ~~March 24, 1994~~ [INSERT DATE OF ADOPTION], which is incorporated herein by reference.

NOTE: Authority cited: Sections 39600, ~~and~~ 39601, and 44254, Health and Safety Code. Reference: Sections 39002, 39003, 43000, 43013, 43100, 43101, 43102, 43103, 43104, ~~and~~ 43107, ***43200,*** 43200.5, and 44254 Health and Safety Code.

ATTACHMENT III

REQUEST FOR EMISSION STANDARDS, TEST PROCEDURES AND VEHICLE TEST DATA

All of the following documents are available on the Air Resources Board Information System (ARBIS) electronic bulletin board. The documents may be found in the "LEV Program" menu item in the "System Features" menu. The ARBIS may be accessed via modem by calling (916) 322-2826. Please make sure your communications parameters are set to 8-N-1. If you have a 9600 Baud modem or greater, use the ANSI capabilities that are provided by the more recent modem software packages. Modems slower than 9600 will work with VT-100 or TTY terminal emulation. If you have questions regarding access to the ARBIS, please contact the Business Assistance Hot Line at 1-800-ARB-HLP2 (in California) or (916) 323-3336.

If you would like to receive a hard copy of the following documents, please so indicate and mail or fax this form to:

California Air Resources Board
9528 Telstar Avenue
El Monte, California 91731
Attention: Donna Barragan
FAX: 818-575-6699

* *

_____ California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles **(modified text only)**

_____ California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles **(complete text)**

_____ California Exhaust Emission Standards and Test Procedures for 1987 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles

_____ California Non-Methane Organic Gas Test Procedures **(modified text only)**

_____ California Non-Methane Organic Gas Test Procedures **(complete text)**

_____ California Assembly-Line Test Procedures for 1998 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles

_____ California Motor Vehicle Emission Control and Smog Index Label Specifications

Name: _____

Company: _____

Address: _____

_____

ATTACHMENT IV

SUMMARY OF PROPOSED MODIFIED TEXT SUBSEQUENT TO THE HEARING

The following is a summary of the changes to the regulatory amendments staff proposed subsequent to the Board hearing conducted on September 28, 1995. Modifications to the originally noticed text are designated by ***bold italics*** and ~~***bold strikeout***~~ to represent additions and deletions, respectively.

I. Title 13, California Code of Regulations Section 1956.8(h) and 1960.1(h)(2); California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles

A. Pursuant to a request from the Board, staff is amending the original emission standard designation, Super Low-Emission Vehicle (SLEV) to become Super Ultra-Low-Emission Vehicle (SULEV). This modification has been made throughout the regulatory text in Title 13, CCR, Sections 1956.8 and 1960.1 and the test procedures which are incorporated by reference in those sections.

B. Staff is proposing that the intermediate in-use standard for medium-duty ULEVs be effective only for the first two model years of introduction and also that an intermediate in-use compliance standard be in effect for medium-duty SULEVs certifying to the optional heavy-duty engine standards as set forth in Title 13, CCR, Section 19546.8(h), footnote H. (This text is similar to that proposed at the Board hearing with the post-hearing changes in *underline text*:

H. For engines certified to the 3.5 grams per brake horsepower-hour LEV standards, the in-use compliance standard shall be 3.7 grams per brake horsepower-hour (g/bhp-hr) for the first two model years of introduction. For engines certified to the 2002 and 2003 model year LEV standards, the in-use compliance standard shall be 3.2 g/bhp-hr. For engines certified to the 1992 through 2003 model year ULEV standards, the in-use compliance standard shall be 2.7 g/bhp-hr for the first two model years of introduction. For engines certified to the 1992 and subsequent SULEV standards, the in-use compliance standard shall be 2.2 g/bhp-hr for the first two model years of introduction.

II. Title 13, California Code of Regulations, Section 1960.1, section (h)(2); California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles, sections 3.j, 4, and 6.

A. In Sections 1 (Applicability) 2 (Definitions), 3.d (Formaldehyde Standards) 6.a.2., 6.a.4.(D), 6.b.3, (Demonstrating Compliance) 11.h and 11.l. (Additional Requirements) of the California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles, staff is proposing the addition of the SULEV category to the requirements contained in these sections in order to conform with the certification requirements that are applicable to the TLEV, LEV and ULEV emission categories. The following are examples of the modified text:

Section 6. Demonstrating Compliance
a. Mileage and Service Accumulation; Emission Measurements
2. ... medium-duty LEVs ~~*and*~~ ULEVs ***and SULEVs*** shall accumulate mileage ...

b. Compliance with Emission Standards
3. (i) Separate emission deterioration factors ... exhaust NMOG (all TLEVs, LEVs, ~~*and*~~ ULEVs ***and SULEVs***), exhaust formaldehyde (alcohol vehicles, TLEVs, LEVs, ~~*and*~~ ULEVs, ***and SULEVs***), ...
* * * *
Separate emission correction factors ... exhaust NMOG (all TLEVs, LEVs, ~~*and*~~ ULEVs ***and SULEVs***),

Section 11. Additional Requirements
h. FFV Emission Testing
... not certified to TLEV, LEV, ~~*or*~~ ULEV, ***or SULEV*** emission standards: ...

l. Emission Control System Continuity at Low Temperatures
... certified to TLEV, LEV, ~~*or*~~ ULEV, ***or SULEV*** standards ...

III. Title 13, California Code of Regulations, Section 1960.1, section (g)(1); California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles, section 3.g

A. In the originally noticed text, staff proposed a 50,000 mile intermediate in-use standard for passenger cars and light-duty trucks 0-3750 loaded vehicle weight of 0.090 grams per mile NMOG for the 1999 model year. Staff is proposing to slightly adjust this standard to 0.100 grams per mile NMOG in order to avoid potential calibration revisions for just one year of production.

Vehicle Type	Durability Vehicle Basis	LEV (g/mi)			ULEV (g/mi)			
		Model Year	NMOG	NOx	Model Year	NMOG	CO	NOx
PCs, 0-3750 lb. LVW LDTs	50,000	through 1998	0.100	0.3	through 1998	0.058	2.6	0.3

	50,000	1999	~~0.090~~ 0.100	0.3	1999-2002	0.055	2.1	0.3
	100,000		0.125	0.4	1999-2002	0.075	3.4	0.4
3751-5750 lb. LVW LDTs	50,000	through 1998	0.128	0.5	through 1998	0.075	3.3	0.5
	50,000	1999	0.130	0.5	1999-2002	0.070	2.8	0.5
	100,000		0.160	0.7	1999-2002	0.100	4.4	0.7

ATTACHMENT V

Establishment of Smog Indices for New Light-Duty Vehicles

The purpose of smog indices is to indicate to consumers who are purchasing vehicles the contribution a vehicle will make to ozone formation relative to other vehicles within that vehicle class.

The Air Resources Board (ARB) has approved a requirement to include smog indices on the window labels of new light-duty vehicles (i.e., those with a gross vehicle weight of 6,000 lbs. or less). The ARB has also petitioned the Federal Trade Commission (FTC) to include smog indices in the FTC's Buyers Guide for used vehicles. The FTC has not yet acted on this petition. If the FTC denies the ARB's petition, the ARB will then require that smog indices for used light-duty vehicles be displayed on a perforated attachment to the FTC's Buyers Guide. The ARB will be proposing smog indices for used vehicles at a later date.

Smog indices are based on exhaust and evaporative emissions of ozone precursors. Ozone precursor emissions include exhaust non-methane organic gas emissions (NMOG), exhaust oxides of nitrogen emissions (NOx), and evaporative hydrocarbon emissions (HC). A smog index of 1.00 is assigned to new passenger cars, light-duty trucks 0-3750 lbs LVW, and light-duty trucks 3751-5750 lbs LVW which certify to Tier 1 standards for exhaust emissions and which certify to the old evaporative emission standards that are currently being phased out. A vehicle which is assigned a smog index of 1.00 is considered to be a "base vehicle." New vehicles which certify to more stringent emission standards than these are assigned smog indices of less than 1.00. Older used vehicles will eventually be assigned smog indices which are greater than 1.00.

A smog index is based on the ratio of exhaust NMOG, exhaust NOx, and evaporative HC emissions from any given vehicle to those of the base vehicle. Because there is no clear way to determine the relative impact on ozone formation due to these pollutants, the formula which was derived to develop smog indices gives equal weight to exhaust NMOG, exhaust NOx, and evaporative HC when estimating their impact on ozone formation. (The ARB historically has taken a dual approach to reducing ozone within California. This approach is designed to reduce both NMOG (or "ozone-forming HC") and NOx from motor vehicles, stationary sources, etc..) The formula used for these calculations is:

$$\text{Smog Index} = \frac{\text{exhaust NMOG (g/mi)} + \text{exhaust NOx (g/mi)} + \text{evaporative HC (g/mi)}}{\text{exhaust NMOG (g/mi)} + \text{exhaust NOx (g/mi)} + \text{evaporative HC (g/mi)}}$$

vehicle for which smog index is calculated

base vehicle

The NMOG and NOx emission values which are used in the equation are the 50,000

mile exhaust emission standards to which the vehicle is certified. (For example, for a Tier 1 passenger car, the 50,000 mile exhaust NMOG and NOx standards are 0.25 g/mi and 0.4 g/mi, respectively. For a TLEV passenger car, the 50,000 mile exhaust NMOG and NOx standards are 0.125 g/mi and 0.4 g/mi, respectively. For a LEV passenger car, the 50,000 mile exhaust NMOG and NOx standards are 0.075 g/mi and 0.2 g/mi, respectively. For a ULEV passenger car, the 50,000 mile exhaust NMOG and NOx standards are 0.040 g/mi and 0.2 g/mi, respectively.)

Evaporative HC emissions are estimated using an emission model (MOBILE 5) assuming: reformulated gasoline is used, daily temperatures swings of 72° F to 96° F, an inspection and maintenance program is in place (such as exists in California), and failures of the evaporative emission control system are caught by on-board diagnostics II (OBD II). Using these assumptions, evaporative emissions are estimated to be 0.48 g/mi for vehicles which certify to the old evaporative emission standards and 0.14 for vehicles which certify to the new evaporative emission standards.

The decision was made to use a model estimate of the evaporative emissions from vehicles rather than the evaporative emission standards because the evaporative emission standards which are currently being phase-in are based on extreme conditions (three continuous days at 105° F). Because smog indices are intended as educational tools to show the public the relative impact of a particular vehicle on ozone formation relative to other comparable vehicles, the ARB staff decided to base smog indices on evaporative emission estimates which are more representative of average summer days in the South Coast Air Basin (72° F to 96° F), rather than higher temperature conditions which occur on a few days of the year. Because Phase II (reformulated) gasoline will be sold in California beginning in 1996, evaporative emissions are estimated assuming the use of reformulated gasoline. (Reformulated gasoline has a lower vapor pressure and, therefore, results in lower evaporative emissions that conventional gasoline.) California regulations which require light-duty vehicles to be equipped with OBD II systems are currently being phased-in. By 1998, the model-year in which smog index labels will be required, 100 percent of new light-duty vehicles must be equipped with OBD II systems. Therefore, evaporative emission estimates assume the use of these systems.

Sample Calculation:

Using the assumptions described above, the smog index for a LEV passenger car which is certified to the new evaporative emission regulations can be calculated as follows:

$$\text{Smog Index} = \frac{\textit{LEV certifying to the new evaporative emission regulations}}{\textit{base vehicle}} = \frac{0.075 \text{ g/mi} + 0.2 \text{ g/mi} + 0.14 \text{ g/mi}}{0.25 \text{ g/mi} + 0.4 \text{ g/mi} + 0.48 \text{ g/mi}} = 0.37$$