

TITLE 13. CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC HEARING TO CONSIDER ADOPTION OF NEW CERTIFICATION TESTS AND STANDARDS TO CONTROL EMISSIONS FROM AGGRESSIVE DRIVING AND AIR-CONDITIONER USAGE FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES UNDER 8,501 POUNDS GROSS VEHICLE WEIGHT RATING

The Air Resources Board (ARB or Board) will conduct a public hearing at the time and place noted below to consider adoption of new certification tests and standards to control emissions from aggressive driving and air-conditioner usage for passenger cars, light-duty trucks, and medium-duty vehicles under 8,501 pounds gross vehicle weight rating.

Date: July 24, 1997

Time: 9:30 a.m.

Place: Board Hearing Room, Lower Level
2020 L Street
Sacramento, California 95814

This item will be considered at a two-day meeting of the Board, which will commence at 9:30 a.m. on July 24, 1997 and may continue at 8:30 a.m. on July 25, 1997. This item may not be considered until July 25, 1997. Please consult the agenda for the meeting, which will be available at least 10 days before July 24, 1997, to determine the day on which this item will be considered.

INFORMATIVE DIGEST OF PROPOSED ACTION

Sections Affected: California Code of Regulations, title 13, sections 1960.1 and 2101, and the incorporated "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles."

Currently, both the California and Federal exhaust emission standards for motor vehicles apply to emissions that occur when the vehicle is operated through a series of narrowly defined operations, collectively known as the Federal Test Procedure, or FTP. Tests conducted in the past several years have shown that the FTP does not accurately reflect various operating conditions, such as aggressive driving and use of the air-conditioner. During these operating conditions, emissions can be substantially higher than those measured during the normal FTP driving cycles. As a result, the ARB and the United States Environmental Protection Agency (U.S. EPA), in close coordination with motor vehicle manufacturers, initiated a joint effort to identify additional test cycles that effectively measure emissions during "off-cycle" operation. Staff from the two agencies ultimately agreed upon two supplemental test procedures (collectively the SFTP) — a high-speed, high-acceleration test known as the US06 test, and the SC03 air-conditioner test.

In October 1996, U.S. EPA issued a Final Rule adopting the SFTP and established SFTP emission standards that apply to passenger cars, light-duty trucks, and heavy light-duty trucks, to be phased-in starting with the 2000 model year. (61 F.R. 54852 (October 22, 1996).) Under the Federal Clean Air Act, the “Tier 1” emission standards — equivalent to California’s 1994 model-year standards — must remain unchanged at the federal level until the 2004 model year. Thus U.S. EPA set 50,000 and 100,000 mile SFTP standards at levels appropriate for Tier 1 vehicles. U.S. EPA took a “composite” approach in which emissions from the US06 test, SC03 air-conditioner test and the FTP are combined on a weighted basis. The composite emissions of non-methane hydrocarbons (NMHC) and oxides of nitrogen (NOx) from passenger cars must meet a 50,000-mile combined standard of 0.65 grams per mile (g/mi). This standard is numerically identical to the sum of the Tier 1 FTP 50,000 mile standards for NMHC (0.25 g/mi) and NOx (0.4 g/mi). Vehicles certified to the Federal SFTP standards must also separately comply with the preexisting FTP standards.

In this rulemaking, the ARB staff is proposing the adoption of the high-speed, high-acceleration and air-conditioner supplemental *test procedures* that are in all respects identical to the procedures adopted by U.S. EPA. The establishment of identical test procedures will continue to permit manufacturers to put a vehicle through one set of tests to demonstrate compliance with both the California and Federal standards.

The staff is also proposing that the Board adopt SFTP emission *standards*, phased-in starting with the 2001 model year, that overall are substantially more stringent than the Federal SFTP standards and will achieve very significant emission reductions. Under the California Low-Emission Vehicle and Clean Fuels program, by the 2001 model year the vast majority of passenger cars and light-duty trucks will be certified to the low-emission vehicle (LEV) level of standards, which limits hydrocarbon emissions to only 30 percent of the Federal Tier 1 level, and NOx to 50 percent of the Tier 1 level. Thus, without any additional SFTP control strategies, an LEV would be expected to have substantially lower SFTP emissions than a Tier 1 vehicle. To comply with the proposed SFTP standards, there are also technologically feasible control strategies that can significantly further reduce SFTP emissions from LEVs.

Under staff’s proposal, there would be one set of 4,000 mile SFTP standards, made up of a US06 and an SC03 element, that apply equally to LEVs, ultra-low-emission vehicles (ULEVs), and super-ultra-low-emission vehicles (SULEVs) in the same weight classifications. The California SFTP standards for Tier 1 vehicles and transitional low-emission vehicles (TLEVs) would be identical to the Federal SFTP Tier 1 standards; under the “non-methane organic gas fleet average” element of the Low-Emission Vehicle and Clean Fuels program, manufacturers have the option to sell small numbers of Tier 1 vehicles and TLEVs by the 2001 model year when these proposed regulations are phased-in. As is the case with the ARB’s FTP exhaust emission standards, there would be a set of SFTP emission levels for passenger cars and lighter light-duty trucks, with greater emissions allowed for heavier weight classifications up to and including medium-duty vehicles having a gross vehicle weight rating of 8,500 lbs.

The proposed SFTP standards for LEVs, ULEVs and SULEVs are based on a series of test programs conducted by ARB staff and the motor vehicle industry from June 1995 to February 1997,

and reflect a consensus between staff and industry. The vehicles tested were either LEV prototypes tested by the manufacturers or production vehicles certified to the Tier 1 or TLEV standards and considered to be representative of future LEVs; in both cases the emission control systems were aged to 50,000 miles. ARB staff also tested additional low-mileage (around 4000 miles) vehicles.

The objective of the test programs was to determine US06 and SC03 emission levels from vehicles under two distinct modes: first, in their original configuration, and second, with SFTP emission control optimized using engine calibration techniques. The main control strategy investigated for both the US06 and SC03 cycles was the use of air-fuel ratio “bias,” in which slightly rich air-fuel ratios can reduce NMHC plus NOx by increasing catalyst NOx conversion efficiency. Ultimately, the lowest emission levels were achieved with the optimized low-mileage vehicles. They had average NMHC plus NOx US06 emissions of 0.09 g/mi; this was a 68 percent reduction from average unoptimized emissions. The low-mileage vehicles optimized for the air-conditioning test had average NMHC plus NOx SC03 emissions of 0.13 g/mi, a 64 percent reduction from the average unoptimized emissions.

The proposed 4,000 mile SFTP standards for LEV and ULEV passenger cars are as follows:

US06 (g/mi)		SC03 (g/mi)	
NMHC+NOx	CO	NMHC+NOx	CO
0.14	8.0	0.20	2.7

The NMHC plus NOx values approximate the average emissions of the optimized low-mileage test vehicles, with a 50 percent compliance margin. The compliance margin factor allows for headroom between the vehicle emission levels during certification testing and the emission standards to account for sources of emission variability. The staff is recommending establishment of 4,000 mile standards because these standards can be appropriately based on the impressive emission performance of the low-mileage vehicles tested. Some deterioration in SFTP emissions will be expected over 50,000 and 100,000 miles. However, gross deterioration should be avoided by the existence of 50,000 and 100,000 mile FTP emission standards, and by the use of On-Board Diagnostics II systems.

Staff conservatively estimates that at least 70 percent of LEVs will comply with the US06 and SC03 standards with only software modifications, typically consisting of a rich-bias calibration. The remaining vehicles would require catalyst hardware modifications, generally either increased precious metal loading or catalyst volume. In 2020, the proposal is estimated to reduce statewide emissions of NMHC plus NOx by 133 tons per day.

AVAILABILITY OF DOCUMENTS AND CONTACT PERSON

The Board staff has prepared a Staff Report which includes the initial statement of reasons for the proposed action and a summary of the environmental impacts of the proposal. Copies of the Staff Report, the Technical Support Document, and the full text of the proposed regulatory language may

be obtained from the Public Information Office, Air Resources Board, 2020 L Street, Sacramento, California 95814, (916) 322-2990. The Board staff has compiled a record which includes all information upon which the proposal is based. This material is available for inspection upon request to the contact person identified immediately below.

Further inquiries regarding this matter should be directed to Susan Kwan of the Emission Research Section in the ARB's Mobile Source Control Division, at (818) 575-6696.

COSTS TO PUBLIC AGENCIES AND TO BUSINESSES AND PERSONS AFFECTED

The determinations of the Board's Executive Officer concerning the costs or savings necessarily incurred in reasonable compliance with the proposed regulatory action are presented below. An assessment of the economic impacts of the proposed regulatory action can be found in the Staff Report.

The Executive Officer has determined that the proposed regulatory action will not create costs or savings, as defined in Government Code section 11346.5(a)(6), to any state agency or in federal funding to the state, costs or mandate to any local agency or school district whether or not reimbursable by the state pursuant to Part 7 (commencing with section 17501), Division 4, Title 2 of the Government Code, or other nondiscretionary savings to local agencies.

In preparing the regulatory proposal, the staff has considered the potential economic impacts on California business enterprises and private individuals. Virtually none of the motor vehicle manufacturers producing California motor vehicles that will be subject to the California SFTP requirements are California businesses, and thus California businesses will not incur significant compliance costs.

Motor vehicle manufacturers will incur additional costs to comply with the proposed regulations. These costs can be divided into fixed and variable costs. Fixed costs occur independent of production volumes and are usually equal to vehicle development, certification, and related costs, while variable costs are directly proportional to production volume and are usually equal to the cost of the increased vehicle hardware necessary to comply with a proposed regulation. An unusually large proportion of the potential total costs for this rulemaking are fixed costs because of the expenditures associated with conducting the new certification tests and the fact that most vehicles will not need any changes in hardware. The staff estimates that by the 2001 model year, it is likely that approximately 58 percent of the vehicles subject to the SFTP requirements and sold by major light-duty vehicle manufacturers nationwide will be certified to the California standards and thus be "50-state" vehicles. Under these circumstances, the estimated fixed costs associated with the proposed amendments would range from \$22.80 to \$32.60 per vehicle. Staff estimates that the variable costs to manufacturers will be about \$4.65 per vehicle, resulting in consumer costs of about \$6.00 per vehicle. By combining the fixed and variable costs, the estimated total cost per vehicle ranges from \$28.80 to \$38.60. The cost-effectiveness of the proposed regulation is estimated at \$0.44 to \$0.60 per pound.

California businesses purchasing motor vehicles will experience the small price increases estimated above, to the extent they are passed on by the manufacturer. Because these small vehicle price increases would not have a noticeable cost impact on California businesses, the proposed regulations are not expected to affect the creation or elimination of jobs within California, the creation of new businesses and the elimination of existing businesses with California, or the expansion of businesses currently doing business within the State of California. Given the existence of the Federal SFTP requirements applicable nationwide, the proposed regulations will not have a significant adverse economic impact on the ability of California businesses to compete with businesses in other states.

The Executive Officer has also determined, pursuant to Government Code section 11346.5(a)(3)(B), that the proposed regulatory action will not affect small business because the staff is not aware of any California small businesses that are motor vehicle manufacturers.

Before taking action on the proposed regulatory action, the Board must determine that no alternative considered by the agency would be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons than the proposed action.

SUBMITTAL OF COMMENTS

The public may present comments relating to this matter orally or in writing. To be considered by the Board, written submissions must be addressed to and received by the Clerk of the Board, Air Resources Board, Post Office Box 2815, Sacramento, California 95812, no later than 12:00 noon, July 23, 1997, or received by the Clerk of the Board at the hearing.

The Board requests but does not require that 20 copies of any written statement be submitted and that all written statements be filed at least 10 days prior to the hearing. The Board encourages members of the public to bring to the attention of staff in advance of the hearing any suggestions for modification of the proposed regulatory action.

STATUTORY AUTHORITY AND HEARING PROCEDURES

This regulatory action is proposed under that authority granted in sections 39600, 39601, 43013, 43018, and 43101, 43104, and 43105, Health and Safety Code. This regulatory action is proposed to implement, interpret, and make specific sections 39002, 39003, 39500, 39667, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43103, 43104, 43106, 43107, 43202, 43204 - 43205.5, 43211, and 43212, Health and Safety Code.

The public hearing will be conducted in accordance with the California Administrative Procedure Act, Title 2, Division 3, Part 1, Chapter 3.5 (commencing with section 11340) of the Government Code.

Following the public hearing, the Board may adopt the regulatory language as originally proposed, or with nonsubstantial or grammatical modifications. The Board may also adopt the proposed regulatory language with other modifications if the text as modified is sufficiently related to the originally proposed text that the public was adequately placed on notice that the regulatory language as modified could result from the proposed regulatory action; in such event the full regulatory text, with the modifications clearly indicated, will be made available to the public, for written comment, at least 15 days before it is adopted. The public may request a copy of the modified regulatory text from the Board's Public Information Office, 2020 L Street, Sacramento, California 95814, (916) 322-2990.

CALIFORNIA AIR RESOURCES BOARD

Michael P. Kenny
Executive Officer

Date: May 27, 1997