

## TITLE 13 CALIFORNIA AIR RESOURCES BOARD

### **NOTICE OF PUBLIC HEARING TO CONSIDER AMENDMENTS TO THE PUBLIC TRANSIT BUS FLEET RULE AND EMISSION STANDARDS FOR NEW URBAN BUSES**

The California Air Resources Board (Board or ARB) will conduct a public hearing at the time and place noted below to consider amendments to the public transit bus fleet regulations. The amendments modify the current transit bus fleet rule and provide additional emission test procedures for specific urban buses, but do not affect new engine emission standards. This notice summarizes the significant amendments. The staff report presents all proposed amendments in greater detail.

DATE: October 24, 2002

TIME: 9:30 a.m.

PLACE: Air Resources Board  
Auditorium  
9530 Telstar Avenue  
El Monte, CA 91731

This item will be considered at a two-day meeting of the Board, which will commence at 9:30 a.m., on October 24, 2002 and may continue at 8:30 a.m., October 25, 2002. This item may not be considered until October 25, 2002. Please consult the agenda for the meeting which will be available at least 10 days before October 24, 2002, to determine when this item will be considered.

This facility is accessible to persons with disabilities. If accommodation is needed, please contact ARB's Clerk of the Board at (916) 322-5594 by October 10, 2002, to ensure accommodation. Persons with hearing or speech impairments can contact us by using our Telephone Device for the Deaf (TDD) at (916) 324-9531, or (800) 700-8326 for TDD calls from outside the Sacramento area.

### **INFORMATIVE DIGEST OF PROPOSED ACTION**

**Sections Affected:** Proposed amendments to sections 1956.1, 1956.2, 1956.4, 1956.8, and 2112, title 13, California Code of Regulations (CCR), and the incorporated document titled "California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric Vehicles, in the Urban Bus and Heavy-duty Vehicle Classes."

**Background:** In February 2000 the Board approved the Public Transit Fleet Rule and Emission Standards For New Urban Buses. The multifaceted transit bus regulations set

fleet requirements, applicable to transit agencies, and set more stringent mid- and long-term oxides of nitrogen (NOx) and particulate matter (PM) emission standards for new urban bus engines, applicable to engine manufacturers. Transit agencies were required to choose either a diesel or alternative fuel compliance path. The fuel path selected determines the compliance schedule and reporting requirements. The fleet rule was designed to provide transit agencies with flexibility in meeting the NOx standard while achieving near-term PM reductions and promoting advancement of PM control technology. The adopted PM fleet rule requirements are listed in Table 1. The PM standard requires transit agencies to retrofit progressively newer model-year (MY) buses with devices capable of reducing PM emissions by 85 percent. In addition to the fleet rule requirements, the Board adopted engine NOx emission standards designed to achieve long-term emission benefits from new bus engines.

**Table 1**

<b>Transit Bus PM Fleet Retrofit Requirements – By Fuel Path Percentage of Model-Year Buses Required to Demonstrate a Minimum of 85% Reduction of PM</b>	
<b>Diesel Path</b>	<b>Alternative Fuel Path</b>
Tier 1 (pre 1991-MY) 100% by January 1, 2003	Tier 1 (pre 1991-MY) 100% by January 1, 2003
Tier 2 (1991 – 1995-MYs) 50% by 1/1/03 100% by 1/1/04	Tier 2 (1991 – 1995-MYs) 20% by 1/1/03 75% by 1/1/04 100% by 1/1/05
Tier 3 (1996 – pre-Oct. 2002-MYs) 20% by 1/1/05 75% by 1/1/06 100% by 1/1/07	Tier 3 (1996 – pre-Oct. 2002-MYs) 20% by 1/1/07 75% by 1/1/08 100% by 1/1/09

Recognizing the progressive nature of the fleet rule and emission standards, the Board directed staff to report back on the progress of implementing the regulatory requirements. Staff worked closely with transit agencies, urban transit bus manufacturers, and engine and drive system manufacturers to gather information. Staff reported back to the Board in September 2001 and March 2002. Based on the evaluation of available information, staff determined that most transit agencies would be able to meet the fleet rule requirements pertaining to NOx emissions. However, PM retrofit technology capable of reducing PM emissions by 85 percent or more is not available for 1993 model year and older engines.

**Proposed Actions:** These proposed regulatory amendments are designed to provide transit agencies with greater flexibility in complying with the required emission standards. The proposed amendments include: modifying the current, model year based, PM retrofit requirements to establish a total PM reduction requirement; allowing transit agencies in the South Coast Air Quality Management District (SCAQMD) that

have elected to follow the “diesel” path a one time option of changing to the “alternative fuel” path; modifying the alternative fuel provision for transit agencies on the diesel fuel path; authorizing the Executive Officer to grant small transit agencies a delay in implementation of the regulation; modifying and including additional definitions for clarification of the urban transit bus fleet rule; repealing the current certification procedure for PM retrofit devices adopted November 2000; and providing interim procedures for certification of hybrid-electric urban transit buses.

## **A. Amendments to the Fleet Rule**

### **1. PM Emission Reduction Proposal**

As directed by the Board in March 2002, staff reviewed the technology available to achieve the current PM retrofit requirements. Staff concluded that PM retrofit technology capable of reducing in-use PM emissions by 85 percent or more is not currently available for 1993 model year and older engines. In order to enable transit agencies to comply with feasible PM emission reduction requirements, yet still aggressively reduce in-use PM emissions, staff proposes to amend the current rule which requires transit agencies to retrofit a percent of its overall fleet for each model year. The proposed amendments would require transit agencies to reduce PM by a specified percentage based on total diesel PM emissions. The proposed schedule to achieve the required percent of PM emission reductions is based on the implementation dates of the original regulation’s implementation schedule and on the fuel path selected.

The proposed amendments will require a transit agency to reduce its overall diesel fleet PM emissions by a specified percentage. Total certified diesel fleet PM emissions as of January 1, 2002 will serve as the baseline value for calculating the required reduced emission level. The proposed implementation schedule and the percent reduction of PM from the baseline PM emission levels are provided in Table 2, below. For example, in 2004, transit agencies that selected the diesel fuel path would be allowed to emit up to 60 percent of their January 1, 2002 total diesel PM emissions, a 40 percent diesel PM emission reduction; and transit agencies that selected the alternative fuel path would be allowed to emit up to 80 percent of their January 1, 2002 total diesel PM emissions, which is a 20 percent diesel PM emission reduction.

The total diesel PM emission reduction proposal applies only to diesel-fueled, dual-fueled, bi-fueled, and diesel HEBs; in other words, any engine that uses diesel fuel and has diesel PM emissions. A transit agency with alternative-fueled buses and diesel-fueled buses would be required to reduce PM emissions from its diesel buses only. In this case, a PM emissions baseline would be based on the transit agency’s diesel bus population. This proposal is designed to ensure that every diesel fleet will have its in-use PM emissions significantly reduced by 2007 or 2009, depending on fuel path.

Transit agencies may use a variety of methods to reduce their diesel PM emissions to comply with the proposed diesel PM emission reduction requirement, including bus

retirement, engine repower, purchase of new low-emission buses, and installation of a verified diesel emission control strategy. Transit agencies may retire older buses or repower engines certified to higher emissions levels and replace them with newer diesel, dual fuel, bi-fuel, or diesel hybrid-electric buses certified to 0.01 g/bhp-hr, or with alternative fuel buses. Replacement of a diesel bus with an alternative-fuel bus also reduces the total diesel PM emissions.

**Table 2**

<b>Proposed Compliance Schedule for Total Diesel PM Emissions</b>		
<b>Compliance Year (as of January 1<sup>st</sup>)</b>	<b>Diesel Fuel Path Percent Reduction</b>	<b>Alternative Fuel Path Percent Reduction</b>
2004	40	20
2005	60	40
2007	85	60
2009	85	85

## **2. Fuel Path Change**

In order to determine which, if any, transit agencies would consider making a fuel path change, staff notified transit agencies and asked for comments. The only transit agencies that responded to the request for comment were in the SCAQMD. Therefore, the proposed amendments include a one-time opportunity for a transit agency in the SCAQMD to change its fuel path selection from diesel to alternative fuel. In establishing the fleet rule, the implementation dates for transit agencies on each fuel path were determined in order to ensure that emission reductions were essentially equivalent over the life of the rule. Transit agencies on the diesel path have earlier implementation dates for reducing emissions when compared to those set for the alternative fuel path.

Because transit agencies in the SCAQMD have already been purchasing alternative-fuel buses in accordance with District rules, allowing these agencies to change to the alternative fuel path would have little or no impact on the benefits expected from the regulation. Staff therefore proposes to limit the scope of the fuel path change only to transit agencies in the SCAQMD, and to require that any transit agency that wishes to change its fuel path declare its intention by January 31, 2004. This date would allow transit agencies sufficient time to bring the question before their management or Board, and would allow them to combine required reports on compliance with the annual report due each January 31.

## **3. Alternative Fuel Bus Purchase Provision for Diesel Path Transit Agencies**

The required certified emission level of an engine that a transit agency wishes to purchase during 2004 through 2006 is dependent on the agency's selected fuel path. The current regulations prohibit transit agencies on the diesel path from purchasing

diesel-fueled, dual-fueled, bi-fueled, or alternative-fueled engines with certified NOx emissions greater than 0.5 g/bhp-hr. This requirement would also apply to diesel-fueled, dual-fueled, bi-fueled engines purchased by transit agencies on the alternative fuel path. This requirement would not apply, however, to alternative-fueled engines purchased by transit agencies on the alternative fuel path. Staff does not expect any full-sized alternative-fueled or diesel-fueled urban bus engines certified to 0.5 g/bhp-hr NOx emissions to be available through 2006.

To encourage and facilitate transit agencies on the diesel path to purchase alternative-fueled engines, staff proposes to remove the 0.5 g/bhp-hr NOx emission standard for certain transit agencies. That is, staff proposes to remove the restriction that prohibits transit agencies on the diesel path from purchasing model year 2004 to 2006 alternative-fueled urban bus engines with NOx emissions in excess of 0.5 g/bhp-hr.

#### **4. Transit Agency Request for Delay**

Staff has been asked by a number of transit agencies to allow them to deviate from the retrofit and fuel implementation schedules because of financial hardship. Staff believes this request is meritorious. Staff proposes adding a general provision that would allow a transit agency, with fewer than 20 buses, to request an implementation delay based on a convincing demonstration of financial hardship. Staff's proposal provides a mechanism to allow the Executive Officer to hear and decide on the merits of exceptional requests for an implementation delay.

#### **5. Definitions**

To clarify the intent and facilitate implementation of the transit bus regulation, staff proposes to modify the definitions of "active fleet" and "alternative fuel", and to add definitions for "emergency contingency vehicle" and "spare bus".

The most significant change pertains to the definition for alternative fuel. Previously the definition precluded all use of diesel fuel. The proposed revision will allow the use of small amount of diesel as a pilot ignition source.

#### **6. Repeal Certification Procedures for PM Retrofit Devices**

The proposed amendments require that any device installed on urban buses to meet the diesel PM reduction requirement be verified under the procedures adopted therein. Currently, there are two procedures available to manufacturers of diesel emission control strategies to certify technology. To ensure that all manufacturers follow the same procedures, have the same warranty and in-use compliance requirements, it is necessary to repeal "California Certification Procedures for PM Retrofit Devices for On-Road Heavy-Duty Diesel Vehicles," adopted November 22, 2000 and incorporated by reference in CCR title 13, section 1956.2 (f) (7). These procedures would be replaced with those adopted by the Board in May 2002: "Diesel Emission Control

Strategy Verification Procedure, Warranty and In-Use Compliance Requirements for On-Road, Off-Road, and Stationary Diesel-Fueled Vehicles and Equipment.” This modification would have no impact on transit agencies or businesses because no manufacturer has followed the certification procedures that were adopted November 22, 2000.

## **7. Hybrid-Electric Bus Certification Procedure**

Heavy-duty hybrid-electric vehicles, including transit buses, are currently certified using ARB- approved engine certification test procedures. Current engine certification procedures do not enable the quantification of emission reductions resulting from the use of a smaller engine operating more efficiently in a hybrid-electric drive system. A specific hybrid-electric certification procedure would provide manufacturers and transit agencies with representative emission values that would allow quantification of emissions from different engine/drive system combinations and would facilitate the comparison of hybrid-electric bus emissions with other technologies.

The proposed interim certification procedure for determining compliance with the urban transit bus emission standards, applicable to 2004 and subsequent model year hybrid-electric buses, is based on a modified version of the Society of Automotive Engineers (SAE) Recommended Practices, SAE J2711 (April 2002). SAE J2711 was developed to test the emissions of heavy-duty hybrid-electric vehicles using chassis dynamometer tests. The HEB’s certification value is determined through calculations using chassis dynamometer tests and engine certification values for both the HEB and a conventional drivetrain urban transit bus. The ARB proposed procedures include a provision for chassis dynamometer testing of conventional drivetrain urban transit buses to determine baseline emissions.

To provide flexibility and facilitate sales of HEBs, up to two parties (i.e. the engine/turbine/fuel cell manufacturer and the electric drive component manufacturer) may apply for an Executive Order identifying the certified emission standard, for model years 2004 through 2006. Starting with model year 2007, only one party may apply for an Executive Order identifying the emission standard achieved by the HEB. HEBs could still be certified using current engine-based certification procedures on a case-by-case basis, if approved by ARB’s Executive Officer.

### **AVAILABILITY OF DOCUMENTS AND AGENCY CONTACT PERSON**

The Board staff has prepared a Staff Report, which includes the Initial Statement of Reasons for Rulemaking and a summary of the environmental impacts of the proposed action, titled “Proposed Modifications to the Public Transit Bus Fleet Rule and Interim Certification Procedures for Hybrid-Electric Urban Transit Buses.” Copies of the Staff Report and the full text of the proposed regulatory language may be accessed on the ARB’s web site listed below, or may be obtained from the Board’s Public Information Office, 1001 “I” Street, Sacramento, California 95814, (916) 322-2990 at least 45 days

prior to the scheduled hearing. Upon its completion, the Final Statement of Reasons (FSOR) will be available and copies may be requested from the agency contact person in this notice, or may be accessed on the ARB's web site listed below. In addition, the Board Staff has compiled a record that includes all information upon which the proposal is based. The material is available for inspection upon request to the contact person identified below.

To obtain these documents in an alternate format, please contact the Air Resources Board Americans with Disability Act (ADA) Coordinator at (916) 323-4916, TDD (916) 324-9531, or (800) 700-8326 for TDD calls from outside the Sacramento area.

Further inquiries concerning the substance of the proposed regulation may be directed to the designated agency contact persons, Mr. Juan Osborn, at (626) 575-6998 or [josborn@arb.ca.gov](mailto:josborn@arb.ca.gov), or Ms. Lucina Negrete, at (916) 327-2938 or [lnegrete@arb.ca.gov](mailto:lnegrete@arb.ca.gov).

Further, the agency representative and designated back-up contact persons to whom procedural inquiries concerning the proposed administrative action may be directed are Artavia Edwards, Manager, Board Administration & Regulatory Coordination Unit, (916) 322-6070, or Alexa Malik, Assistant, Board Administration & Regulatory Coordination Unit, (916) 322-4001.

This notice, the ISOR and all subsequent regulatory documents, including the FSOR when completed, will be available on the ARB Internet site for this rulemaking at [www.arb.ca.gov/regact/bus02/bus02.htm](http://www.arb.ca.gov/regact/bus02/bus02.htm) or [www.arb.ca.gov/msprog/bus/bus.htm](http://www.arb.ca.gov/msprog/bus/bus.htm).

### **COST 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 regulations are presented below.

Pursuant to Government Code sections 11346.5(a)(5) and 11346.5(a)(6), the Executive Officer has determined that the proposed regulatory action will not create costs or savings to any state agency or in federal funding to the state, costs or mandate to any local agency or school district whether or not reimbursable by the State pursuant to part 7 (commencing with section 17500), division 4, title 2 of the Government Code, or other non-discretionary savings to State or local agencies.

In developing this regulatory proposal, the ARB staff evaluated the potential economic impacts on representative private persons or businesses. The Executive Officer has determined that there will be no, or an insignificant, potential cost impact, as defined in Government Code section 11346.5(a)(9), on private persons or businesses directly affected resulting from the proposed action, including the ability of California businesses to compete with businesses in other states, or on representative private persons. The proposed amendments will provide transit agencies with greater flexibility to comply with the required standards. Staff believes that the proposed amendments would cause

no adverse impacts in California employment, business status, or measured competitiveness or increase costs above those estimated for the Public Transit Bus Fleet Rule and Emission Standards for Urban Buses regulations adopted February 2000.

The proposed amendments would provide a mechanism that allows some transit agencies to change from the diesel path to the alternative-fuel path; establish a fleet average PM retrofit requirement; and establish a new interim certification procedure for hybrid-electric urban transit buses. Since the proposed amendments provide transit agencies with greater flexibility to comply with the required emission standards they are not expected to impose costs above those already estimated. Most impacts to business, both positive and negative, will likely occur in other states. Most manufacturers of engines and control technology are located outside of California.

Certification testing of hybrid-electric buses could increase the cost of purchasing a hybrid-electric bus. Manufacturer costs for testing a family of hybrid electric buses, according to proposed interim procedure, would range from \$70,000 to \$120,000 per certification. However, testing would provide manufacturers with a method for demonstrating the full emission reductions achievable from using a hybrid-electric drive system. Testing costs may be transferred to the purchase price of a hybrid-electric bus and transferred to agencies selecting this control option. Since it is not certain how many hybrid-electric buses will be purchased, the proportional increased cost of a hybrid-electric bus cannot be determined at this time.

A transit agency does not typically pay the full cost of purchasing a new bus. Federal funds are available to cover 80 percent of the total cost of a new urban diesel bus and 83 percent of new low emission alternative fuel bus. Since transit agencies can make the choice among emission control options, based on their individual transportation planning and operational needs, the increased cost of purchasing a hybrid-electric bus is not considered a significant cost impact.

In accordance with Government Code section 11346.3, the Executive Officer has determined that the proposed regulatory action will not affect the creation or elimination of jobs within the State of California, the creation of new businesses or elimination of existing businesses within the State of California, or the expansion of businesses currently doing business within the State of California.

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 businesses because this is a change to a regulation that is voluntary with respect to small businesses and there are no mandated requirements and no associated impacts.

### **ENVIRONMENTAL IMPACTS**

The proposed amendments provide greater flexibility to transit agencies to meet current regulations and do not set new emission standards. It is anticipated that after 2004 the proposed amendments would achieve close to the same emission reductions, as



anticipated from the February 2000 Public Transit Bus Fleet Rule. Two factors account for lower emission reductions prior to 2004: the lack of technology to retrofit older engines, and the need to provide transit agencies additional time to obtain funding to replace older engines. HEB's have the potential to provide emission reductions beyond those required in the regulations. However, there is no quantifiable method for determining how many HEBs with NOx emissions below those required will be purchased and therefore, it is not possible to quantify at this time any additional emission benefit.

The proposed amendments regulate all transit agencies throughout the state to ensure that emission benefits are achieved for all Californians. In addition, urban transit buses transport people every day to destinations in various communities throughout California; hence, environmental impacts resulting from the proposed amendments would affect all communities where urban transit buses travel.

### **SUBMITTAL OF COMMENTS**

The public may present comments relating to this matter orally or in writing at the hearing, and in writing or by e-mail before the hearing. To be considered by the Board, written submissions not physically submitted at the hearing must be received **no later than 12:00 noon, October 23, 2002**, and addressed to the following:

Postal mail is to be sent to:

Clerk of the Board  
Air Resources Board  
1001 "I" Street, 23<sup>rd</sup> Floor  
Sacramento, California 95814

Electronic mail is to be sent to: [bus02@listserv.arb.ca.gov](mailto:bus02@listserv.arb.ca.gov)  
and received at the ARB **no later than 12:00 noon, October 23, 2002**.

Facsimile transmissions are to be transmitted to the Clerk of the Board at (916) 322-3928 and received at the ARB **no later than 12:00 noon October 23, 2002**.

The Board requests but does not require that 30 copies of any written statement be submitted and that all written statements be filed at least 10 days prior to the hearing so that ARB staff and Board Members have time to fully consider each comment. The ARB 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 the authority provided in Health and Safety Code sections 39600, 39601, 43013, 43018, 43101, 43102, 43104, 43105, 43200, 43806, and Vehicle Code section 28114. This action is proposed to implement, interpret, and make specific California Health and Safety Code sections, 39002, 39003, 43000, 43009.5, 43012, 43018, 43100, 43101.5, 43102, 43104, 43105, 43106, 43200, 43204, 43205.5, and 43806. Before taking final 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.

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 amendments 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, 1001 "I" Street, Sacramento, California, 95814, (916) 322-2990.

CALIFORNIA AIR RESOURCES BOARD

Michael P. Kenny  
Executive Officer

Date: