

TITLE 13. CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC HEARING TO CONSIDER THE ADOPTION OF A PUBLIC TRANSIT BUS FLEET RULE AND EMISSION STANDARDS FOR NEW URBAN BUSES

The Air Resources Board (the "Board" or "ARB") will conduct a public hearing at the time and place noted below to consider the adoption of a public transit bus fleet rule and emission standards for new urban bus engines.

DATE: January 27, 2000

TIME: 9:30 a.m.

PLACE: South Coast Air Quality Management District
Auditorium
21865 East Copley Drive
Diamond Bar, California

This item will be considered at a two-day meeting of the Board, which will commence at 9:30 a.m., January 27, 2000, and may continue at 8:30 a.m., January 28, 2000. This item may not be considered until January 28, 2000. Please consult the agenda for the meeting, which will be available at least 10 days before January 27, 2000, to determine the day on which this item will be considered.

This facility is accessible to persons with disabilities. If accommodation is needed, please contact the ARB's Clerk of the Board at (916) 322-5594, or the Telecommunications Device for the Deaf (TDD) at (916) 324-9531, or (800) 700-8326 for TDD calls from outside the Sacramento area by January 13, 2000.

INFORMATIVE DIGEST OF PROPOSED ACTION/PLAIN ENGLISH POLICY STATEMENT OVERVIEW

Proposed Actions and Sections Affected:

Proposed amendments to section 1956.8 of title 13, California Code of Regulations (CCR) and the incorporated "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-duty Engines and Vehicles," and proposed adoption of new sections 1956.1, 1956.2, 1956.3, and 1956.4 of title 13, CCR.

Background

Pursuant to Health and Safety Code section 43806, the ARB adopted amendments to the emission standards and test procedures for urban transit buses and engines and other heavy-duty vehicles and engines in June 1993 and June 1995, respectively. The ensuing regulations set the California particulate matter (PM) emission standard at 0.05 grams per brake horsepower-hour (g/bhp-hr) and the oxides of nitrogen (NOx) emission standard at 4.0 g/bhp-hr for all 1996 and later California urban bus engines. For other heavy-duty engines (exclusive of urban transit buses), the PM and NOx

emission standards for all 1998 and later California heavy-duty engines and vehicles, were set at 0.10 and 4.0 g/bhp-hr, respectively. Since 1998, California and U.S. EPA emission standards have been consistent for heavy-duty vehicles and urban buses.

To further reduce emissions, however, the U.S. EPA adopted regulations in October 1997 that specified more stringent emission standards for all 2004 and subsequent model year heavy-duty diesel engines, including urban bus engines (Federal Register, Vol. 62, No. 203, October 21, 1997, pp.54694-54730). In April 1998, the ARB adopted more stringent emission standards for all 2004 and subsequent model year heavy-duty diesel engines that aligned with those already adopted by the U.S. EPA. Like the federal standards, the California standards included a NO_x plus non-methane hydrocarbon (NMHC) emission standard of 2.4 g/bhp-hr; or 2.5 g/bhp-hr with a 0.5 g/bhp-hr NMHC cap.

Subsequent to the adoption of those regulations, the U.S. EPA, the ARB, and seven manufacturers of heavy-duty engines signed the Heavy-duty Diesel Settlement Agreements in 1998. The Settlement Agreements, applicable to engines produced for sale in California, are a result of engine manufacturers using alternative emission control devices that increased emissions of NO_x beyond what would be expected on the Federal Test Procedure. The Settlement Agreements require a variety of mitigating measures, including requiring most engine manufacturers to produce engines meeting the 2004 standards beginning in late 2002. Similar agreements, referred to collectively as the federal Consent Decree, are applicable to engines produced for sale outside of California.

The regulatory proposal summarized below focuses strictly on urban buses and does not include requirements to reduce emissions from school buses. However, reducing emissions from school buses and reducing students' direct exposure to toxic diesel PM is a high priority for the ARB. A shortage of grant funds to subsidize the purchase of low-emission, alternative-fuel school buses and the necessary alternative-fuel infrastructure has been a barrier to including school buses in this proposal. As part of the ARB's continuing efforts to achieve California's air quality goals, it will consider a separate proposal to reduce emissions from school buses at a later date.

Proposal

This regulatory proposal is intended to further reduce emissions of both ozone precursors and toxic air contaminants from the California urban transit bus sector. California is the only state that has the authority, under both state and federal law, to establish motor vehicle standards different from federal standards. These standards must be equivalent to or more stringent than the federal standards. This regulatory proposal contains: a) a multi-component urban transit bus fleet rule applicable to transit agencies; and b) more stringent emission standards for new urban bus engines applicable to manufacturers of such engines.

I. Adopt a Fleet Rule for Urban Transit Bus Operators – Section 1956.2, Title 13, CCR.

The proposed urban transit bus fleet rule is designed to reduce ozone precursor emissions (NO_x and NMHC) and toxic air contaminants (diesel PM) by encouraging transit agencies to purchase or lease low-emission, alternative-fuel urban buses. To provide transit agencies with flexibility in determining their optimal fleet mix, the proposed rule allows transit agencies to choose between two compliance paths, either the diesel path or the alternative-fuel path. For transit agencies choosing the alternative-fuel path, a minimum 85 percent of new bus purchases would have to be low-emission, alternative-fuel buses, beginning with the adoption of the proposed regulation through model year 2015. The proposed fleet rule contains six components: 1) a NO_x fleet average requirement; 2) PM retrofit requirements; 3) low-emission bus purchase requirements; 4) a zero-emission bus (ZEB) demonstration project; 5) ZEB purchase requirements; and 6) requirements for transit agencies to use low-sulfur diesel fuel. The NO_x fleet average requirements, PM retrofit requirements, and low-sulfur diesel fuel requirements are the same for transit agencies on either the diesel or alternative-fuel path. The two paths differ in applicable emission standards (proposed new section 1956.1, Title 13, CCR), ZEB demonstration project requirements, and ZEB purchase requirements.

The table below summarizes the applicable fleet rule requirements proposed in section 1956.2, and the emission standards proposed in section 1956.1, for transit agencies on both the diesel and alternative-fuel path.

Proposed Urban Transit Bus Fleet Rule Requirements and Emission Standards				
Model Year	“Diesel” Path		“Alternative-Fuel” Path	
	NO_x (g/bhp-hr)	PM (g/bhp-hr)	NO_x (g/bhp-hr)	PM (g/bhp-hr)
2000	4.0	0.05	2.5 optional ₍₁₎	0.05
10/2002	2.5 NO _x +NMHC	0.05	1.8 NO _x +NMHC optional ₍₁₎	0.03
10/2002	4.8 NO _x fleet average		4.8 NO _x fleet average	
2003-09	PM Retrofit requirements		PM Retrofit Requirements	
7/2003	3 bus demo of ZEBs for large fleets (>200)			
2004	0.5	0.01		
2007	0.2	0.01	0.2	0.01
2008	15% of new purchases are ZEBs for large fleets (>200)			
2010			15% of new purchases are ZEBs for large fleets (>200)	

Notes: Shaded area shows existing requirements and existing optional emission standards
 (1) Although transit agencies on the alternative-fuel path are not required to purchase engines certified to these optional standards, the staff expects that they will do so in order to qualify for incentive funding. At present, the only alternative-fuel engines available are certified to optional, lower-emission NO_x standards.

In addition to the PM retrofit requirements proposed here, the U.S. EPA also has requirements for an urban bus retrofit/rebuild program (40 CFR 85.1401 - 1415) as required by the Clean Air Act Amendments of 1990. The program applies to 1993 and earlier model year urban buses whose engines are rebuilt or replaced after January 1, 1995. The program is limited to urban buses operating in metropolitan areas with 1980 populations of 750,000 or more. The PM retrofit requirements proposed as part of this urban transit bus fleet rule apply to all 2003 and earlier model year diesel urban buses, with a delay for only small transit agencies (with an active fleet of less than 20 urban buses) in ozone attainment areas.

California required new urban bus engines to meet a 0.10 g/bhp-hr PM standard in 1991, two years prior to the federal 0.10 g/bhp-hr PM went into effect. As a result, in California, the federal retrofit requirements only apply to 1990 and earlier urban bus engines. While the proposed urban transit bus fleet rule does include a retrofit requirement for urban bus engines certified to 0.60 g/bhp-hr PM, which, in California, are 1990 and earlier model year engines, it is anticipated that the proposed requirement will be met by retiring the 0.60 g/bhp-hr PM engines, rather than retrofitting them.

A. 4.8 g/bhp-hr NO_x Fleet Average Standard

In order to reduce NO_x emissions from the in-use urban bus fleet, transit agencies on both the diesel and alternative-fuel paths must meet and maintain a minimum fleet average standard of 4.8 g/bhp-hr NO_x by October 2002. The ARB staff expects that the fleet average requirement can be achieved by most transit agencies simply by retiring their pre-1988 buses and replacing them with new buses. Transit fleets on the alternative-fuel path will have lower fleet average NO_x levels than those on the diesel path and most likely can continue doing business "as usual." The ARB staff estimates that the fleet average requirement will reduce NO_x emissions statewide by more than two tons per day (tpd) in 2002. However, most of the reduction in NO_x emissions will be occurring through normal fleet turnover and therefore this reduction is not considered part of the cost-effectiveness determination.

B. PM Retrofit Requirements

The PM retrofit requirements, applicable to transit agencies on both the diesel and alternative-fuel path, are intended to reduce toxic diesel PM emissions from existing diesel buses and those model year buses up to the year 2004. Because the PM retrofit requirements are not applicable to alternative-fuel buses, transit fleets on the alternative-fuel path will have a smaller percentage of buses to retrofit. Below is the schedule for the required PM retrofits. All retrofit devices must be certified by the ARB to have an 85 percent or greater efficiency for reducing diesel PM. The staff estimates that the retrofit requirements will reduce toxic PM emissions statewide by 300 pounds per day (lbs/day) in 2005, and by 100 lbs/day in 2010.

TIER 1 – 1990 and Earlier Buses

100 percent of these buses must be retrofitted by January 1, 2003.

TIER 2 – 1991 through 1995 Buses

20 percent of these buses must be retrofitted by January 1, 2003.

75 percent of these buses must be retrofitted by January 1, 2004.
100 percent of these buses must be retrofitted by January 1, 2005.

TIER 3 – 1996 through 2003 Buses

20 percent of these buses must be retrofitted by January 1, 2007.
75 percent of these buses must be retrofitted by January 1, 2008.
100 percent of these buses must be retrofitted by January 1, 2009.

C. Low-Emission Buses

Beginning January 1, 2004, transit agencies on the diesel path may not take delivery of any buses certified to emission levels in excess of the following standards, as proposed in Section 1956.1, Title 13, CCR:

Proposed Emission Standards for 2004-2006 Model Year Diesel or Dual-Fuel Urban Bus Engines (g/bhp-hr)				
NMHC	Formaldehyde	NOx	PM	CO
0.05	0.01	0.5	0.01	5.0

Engine manufacturers can choose to meet these standards with an engine certified at the 2.5 g/bhp-hr standard and an applied aftertreatment system that demonstrates NOx at 0.5 g/bhp-hr and PM at 0.01 g/bhp-hr. Manufacturers are responsible for full certification of the base engine: durability, testing, in-use compliance, and emissions warranty requirements. For the aftertreatment device, the ARB is proposing that manufacturers have reduced certification requirements but full functional warranty requirements. The staff estimates that the standards for 2004 – 2006 model year diesel or dual-fuel urban bus engines will reduce NOx emissions statewide by 5 tpd and PM emissions by 50 lbs/day in 2010. In 2020, the staff estimates that the standards will reduce NOx emissions by 6 tpd and PM emissions by 60 lbs/day.

D. Zero-emission Bus Demonstration for Transit Agencies Choosing the Diesel Path

Transit agencies on the diesel path with more than 200 urban buses in their active fleets must place at least three ZEBs in service by July 1, 2003, as required by the ZEB demonstration project proposed in Section 1956.3, Title 13, CCR. At least one manufacturer, Ballard Power Systems, expects to commercially produce ZEBs by 2002.

E. Zero-emission Bus Purchase

Transit agencies with more than 200 urban buses in their active fleets would be required to purchase (or lease) ZEBs. For transit agencies on the diesel path, a minimum 15 percent of new urban bus purchases/leases must be ZEBs beginning in model year 2008. For transit agencies on the alternative-fuel path, a minimum 15 percent of new urban bus purchases/leases must be ZEBs beginning in model year 2010. These requirements would sunset in the model year 2015. This requirement, discussed in Section 1956.3 below, is intended to provide long-term emission benefits and foster significant advances in advanced, alternative-fuel technologies.

F. Requirements for Low-Sulfur Diesel Fuel

Low-sulfur diesel fuel is necessary for most aftertreatment technologies to function more efficiently and reliably. Therefore, the proposed urban transit bus fleet rule requires any transit agency (on both the diesel and alternative-fuel paths) using diesel fuel to purchase and use low-sulfur diesel fuel with a cap of 15 parts per million sulfur. The requirement is effective beginning July 1, 2002, in order to comply with the proposed PM retrofit requirements.

II. Adopt Zero-emission Bus Requirements – Section 1956.3, Title 13, CCR.

This proposed new section defines a ZEB as an urban bus certified by the Executive Officer to produce zero exhaust emissions of any criteria pollutant (or precursor pollutant) under any and all possible operational modes and conditions. This would include hydrogen-powered fuel cell buses, electric trolley buses, and battery-electric buses.

Under this regulatory proposal, transit agencies with more than 200 urban buses in their active fleets would be required to purchase ZEBs. A minimum 15 percent of all new bus purchases (or leases) must be ZEBs for transit agencies on the diesel path, from model year 2008 through model year 2015. For transit agencies on the alternative-fuel path, the 15 percent ZEB purchase/lease requirement begins in model year 2010 and also ends in model year 2015.

Additionally, transit agencies on the diesel path with more than 200 urban buses in their active fleets must participate in a ZEB demonstration project. Such transit agencies would be required to place at least three ZEBs in service by July 1, 2003. The proposed regulation also includes provisions for multiple transit agencies in the same air basin to participate in a joint ZEB demonstration project, based on approval of the Executive Officer.

III. Adopt California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Year Heavy-Duty Urban Bus Engines and Vehicles -- Section 1956.1, Title 13, California Code of Regulations (CCR).

For 2007 and all subsequent model year urban bus engines, the proposed emission standards for NMHC, formaldehyde, NO_x, PM, and carbon monoxide (CO) are shown in the table below.

Proposed Emission Standards for 2007 and Subsequent Model Year Urban Bus Engines (g/bhp-hr)				
NMHC	Formaldehyde	NO_x	PM	CO
0.05	0.01	0.2	0.01	5.0

These standards are expected to reduce NO_x emissions statewide by less than one ton per day in 2010 and by just over one ton per day in 2020. There is no PM emission

benefit associated with the 2007 standards since the PM emission standard does not change from 2004. The U.S. EPA is expected to adopt equivalent emission standards for heavy-duty engines and vehicles, including urban buses, for the 2007 model year.

In addition to the proposed emission standards for 2007 and subsequent model year urban bus engines, the staff is proposing new emission requirements for the 2004 – 2006 model year diesel or dual-fuel urban bus engines, as discussed in the previous section on fleet rule requirements.

IV. Adopt Reporting Requirements for Urban Transit Bus Operators – Section 1956.4, Title 13, CCR.

Under the provisions of the proposed urban transit bus fleet rule, transit agencies are required to submit reports containing plans and schedules for compliance with the urban transit bus fleet rule. This proposed new section specifies the required reports and the dates on which they are due.

V. Amend the California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Engines and Vehicles – Section 1956.8, Title 13, CCR.

The amendments to this section remove from Section 1956.8 the urban bus exhaust emission standards, which are now included in Section 1956.1, Title 13, CCR. In addition, the amendments change the heavy-duty vehicle (exclusive of urban buses) optional emission standards used for generating mobile source emission reduction credits to reflect changes to the emission standards for 2004 model year engines and vehicles based on provisions in the Settlement Agreements.

AVAILABILITY OF DOCUMENTS AND CONTACT PERSON

The Board staff has prepared a Staff Report: Initial Statement of Reasons (Staff Report) entitled “Proposed Regulation for a Public Transit Bus Fleet Rule and Emission Standards for New Urban Buses” that includes a summary of the environmental impacts of the proposal, if any. Copies of the Staff Report and the full text of the proposed regulatory language may be obtained from the Board’s Public Information Office, 2020 L street, Sacramento, California, 95814, (916) 322-2990, at least 45 days prior to the scheduled hearing. In addition, 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 below. Copies of the documents may also be obtained from the Public Information Office at the address above.

The ARB has determined that it is not feasible to draft the regulation in plain English due to the technical nature of the regulations; however, a plain English summary of the proposed regulation is available from the agency contact person named in this notice, and/or is also contained in the Staff Report for this regulatory action.

To obtain this document in an alternative format, please contact the ARB's Americans with Disabilities Act Coordinator at (916) 323-4916, or TDD (916) 324-9531, or (800) 700-8326 for TDD calls from outside the Sacramento area.

Inquiries regarding this matter should be directed to Mr. Robert Nguyen at (916) 327-2939 or rnguyen@arb.ca.gov, or to Ms. Roberta Hughan at (916) 324-7583 or rhughan@arb.ca.gov, in the Special Projects Section, Mobile Source Control Division.

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 regulations are presented below.

The Executive Officer has determined that the proposed regulatory action will create costs, as defined in Government Code section 11346.5(a)(6), for transportation planning agencies and commissions (the entities that fund transit agencies), and transit agencies statewide. The Executive Officer has also determined that the proposed regulatory action will not create additional 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 mandates to any other 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 nondiscretionary costs or savings imposed upon local agencies. The proposed regulatory action does not impose a mandate on local government agencies that are required to be reimbursed by Section 6 of Article XIII B of the California Constitution.

The costs created for transportation planning agencies and transit agencies statewide is due to the proposed requirements for a NO_x fleet average standard, the proposed requirements to retrofit existing engines to reduce PM emissions, the proposed requirements for low-sulfur diesel fuel, and the proposed requirements for new bus purchases. The following discussion provides a summary of the expected costs to agencies for compliance with the proposed regulatory action.

Fleet NO_x Average Emission Requirements

The ARB staff projects that most transit agencies will comply with the fleet average NO_x emission standard by retiring 1987 model year and earlier buses and by replacing them with new buses meeting more stringent standards. The ARB staff anticipates that in most cases, transit agencies will be able to obtain sufficient funding from available local, state, and federal sources to purchase the new buses. As a result, no significant additional costs to transit agencies are expected for compliance with the 4.8 g/bhp-hr fleet average NO_x emission standard in 2002. There may be, however, instances where a transit agency is not able to obtain sufficient funds to purchase the new buses necessary for compliance with the fleet average NO_x emission standard. In these cases, there will be some cost to transit agencies in complying with the fleet average NO_x emission standard through the use of retrofits or engine repowers.

PM Retrofit Requirements

Under the proposed PM retrofit requirements, transit agencies are responsible for the phased installation of PM retrofit devices that are certified with a conversion efficiency of at least 85 percent. To provide sufficient time to accomplish the PM retrofit requirements, they are divided into three Tiers. The ARB staff estimates that for Tier 1, 800 buses statewide will be required to be retrofitted at a cost of \$3,000 per bus. For Tier 2, staff estimates that 1,500 buses will be required to be retrofitted also at a cost of \$3,000 per bus. For Tier 3, staff estimates that 2,200 buses will be required to be retrofitted at a moderately lower cost of \$2,250 each. The table below provides estimated costs for a “typical” 200-bus fleet, as well as statewide costs.

Average Annual Cost of PM Retrofit Requirements (2003-2009)		
	“Typical “ 200-bus Fleet	Statewide Transit Costs
Tier 1 (by 1/1/03)	\$50,000	\$2,400,000
Tier 2 (by 1/1/05)	\$200,000	\$4,500,000
Tier 3 (by 1/1/09)	\$300,000	\$5,000,000
Total(average annual cost 2002-2008)	\$80,000	\$1,700,000

Low-sulfur Diesel Fuel Requirement

The ARB staff is proposing that by July 1, 2002, all diesel fuel used by transit agencies must be low-sulfur diesel fuel. The incremental cost of the lower sulfur diesel fuel is initially estimated to be five cents per gallon in this time frame for the quantities needed to supply transit agencies within California. For a 200-bus fleet of entirely diesel buses, the estimated incremental cost would be \$120,000 per year. Total statewide annual costs are expected to be approximately \$3,000,000 in 2003, dropping to \$2,000,000 by 2010 with the introduction of more alternative-fuel buses.

New Bus Purchase Requirements

The ARB staff projects that a total of about 420 buses will be purchased annually that would meet the proposed 2004 model year emission standards of 0.5 g/bhp-hr NO_x and 0.01 g/bhp-hr PM. The staff projects that about 440 buses will be purchased annually that would meet the proposed 2007 model year emission standards of 0.2 g/bhp-hr NO_x and 0.01 g/bhp-hr PM. For large transit fleets (fleets greater than 200 urban buses), the ARB staff estimates that 18 demonstration ZEBs will be purchased in 2004, 30 commercial ZEBs will be purchased in 2008, and 80 commercial ZEBs in 2010.

The incremental costs for the low-emission buses are estimated at \$8,000 to meet the proposed 2004 standards, and an additional \$1,000 to meet the lower standards in 2007. For ZEB technology, staff estimates incremental costs at \$275,000 per bus in 2002, \$50,000 per bus in 2007, and a nominal incremental cost in 2010.

Combining the total number of buses needed with the incremental cost allows the ARB staff to calculate the total annual cost of the requirement. In 2004 - 2006, the total cost of the program is \$5,900,000, including the cost of the ZEB demonstration projects. In 2007 - 2009, this total becomes \$5,300,000 per year. This total is reduced by 80 percent due to Federal Transit Administration (FTA) Section 5307 grants and results in a cost to transit agencies of \$1,200,000 per year in 2004 – 2006, and a cost of \$1,300,000 per year in 2007 - 2009. The estimated statewide incremental cost to transit agencies in 2010 of \$800,000 is attributable to the expected reductions in costs of ZEBs in that timeframe.

Alternative-Fuel Buses

This section provides estimates of the costs that could be incurred if a transit agency elects to go on the alternative-fuel path as a means of compliance with the proposed regulation. Based on current fleet composition of transit agencies that have a significant presence of alternative-fuel buses, the ARB staff estimates that about 300 alternative-fuel buses would be purchased annually, which could increase to about 320 buses in 2007. Thus, the total incremental bus purchase cost to transit agencies, based on an incremental cost of \$40,000 per bus and an 83 percent fund match from FTA grants, is about \$2,200,000 per year. This cost is based on current purchasing trends from transit agencies that already have a significant number of alternative-fuel buses in their fleets. These transit agencies would be expected to continue to purchase alternative-fuel buses in the absence of this proposed regulation. Incentive funding by state and local air quality agencies has been available in the past to offset the incremental bus purchase cost not covered by FTA grants. It is not clear whether sufficient funding will continue to be available to offset the entire incremental purchase and infrastructure costs. Based on information obtained from transit agencies that already have significant numbers of alternative-fuel buses, operating costs vary significantly from one transit agency to another. Some transit agencies have shown cost savings.

The Executive Officer has determined that the adoption of the proposed regulatory action will not have a significant adverse economic impact on businesses, including the ability of California businesses to compete with businesses in other states.

The Executive Officer has also 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.

In accordance with Government Code sections 11346.3 and 11346.5, the Executive Officer has determined that the proposed regulatory action is expected to have some cost impact to any companies involved in the manufacture and production of engines and transit buses. There are currently no urban bus engine manufacturers located in California and only one urban bus manufacturer. The staff estimates that the cost of the proposed regulation to engine and bus manufacturers would be less than \$10,000 per bus. The total impact on businesses in California will be determined by the extent to which these companies choose to expand in California, as well as the extent to which any increases in costs could be passed on to the final purchasers of engines and buses. As an example, Ballard Fuel Cells has recently opened a research and development

site in San Diego, California, to promote the use of fuel cell technology in passenger cars and urban transit buses. This expansion is a result of the expected new business opportunities created by the need for lower-emitting transportation technologies.

The Executive Officer has also determined, pursuant to Government Code section 11346.3, that the regulation will not have a significant adverse economic impact on businesses or individuals. The directly affected California businesses include heavy heavy-duty diesel or alternative-fuel urban bus engine manufacturers, urban bus manufacturers, engine retrofit kit manufacturers, exhaust aftertreatment emission control manufacturers, and manufacturers of advanced, alternative-fuel technologies, such as batteries and fuel cells. Since there are no urban bus engine manufacturers located in California and only one urban bus manufacturer in California, most impacts to businesses, both positive and negative, will occur in other states. California transit agencies are expected to absorb the increased costs associated with the proposed regulations. However, there may be costs to bus riders in the form of higher fares if transit agencies choose to pass the increased costs on to them.

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.

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, P.O. Box 2815, Sacramento, California, 95812, no later than 12:00 noon on January 26, 2000, or received by the Clerk of the Board at the meeting.

The Board requests, but does not require, that 25 copies of any written comments 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 California Health and Safety Code sections 39600, 39601, 43013, 43018, 43101, 43103, 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, 43013, 43018, 43100, 43101.5, 43102, 43103, 43104, 43105, 43106, 43107, 43200, 43204, 43205.5, and 43806.

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 an 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: November 30, 1999