

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

AIR RESOURCES BOARD

ERRATA

STAFF REPORT:

**PROPOSED 2005-2006 LOWER-EMISSION SCHOOL BUS PROGRAM
GUIDELINES AND FUNDING ALLOCATION**

Date of Release: January 24, 2006
Scheduled for Consideration: February 23, 2006
Date of Release for Errata: June 5, 2006

At a public meeting held February 23, 2006, the Air Resources Board (ARB or Board) considered and approved the 2005-2006 Lower-Emission School Bus Program Guidelines (Guidelines) and funding allocations for the Lower-Emission School Bus Program. This program has been in effect since the 2000-2001 fiscal year and has historically been funded by the Legislature to reduce emissions of harmful air pollutants, specifically oxides of nitrogen (NOx) and particulate matter (PM), from school buses. The reductions are accomplished in two ways: by funding purchases of newer, lower-emitting school buses to replace older, dirtier buses; and by funding ARB-verified retrofit devices for diesel fueled school buses to reduce emissions of PM. The Board's approval of the Guidelines and funding allocations were based upon directives in the Budget Act, information provided to the Board in the Staff Report, and public testimony received prior to and at the public meeting. The Staff Report was released for public review and comment on January 24, 2006. It explained the nature and history of this grant program, how it has been implemented, the emission reductions associated with it, and the 2005-2006 funds. The Staff Report contained several errors which, though

not substantial enough to affect the Board's approval of the Guidelines, staff wishes to correct. Hence, this errata document.

This errata corrects statements in the Staff Report regarding California legislation for seat belt requirements in new school buses; adds month and day to the date when the Federal Motor Vehicle Safety Standard became effective; modifies the new bus funding allocation to reflect the final proposal; adjusts the estimate of the number of pre-1977 school buses in the public school bus fleet; adds a clarifying phrase concerning the recently verified Level 3 active diesel particulate filter; corrects reference citations; updates the final list of oldest buses; and corrects several typographical errors. Additionally, staff updated the emission benefits estimate to reflect a more precise determination of the near-term PM benefit of replacing a pre-1977 model year bus with a 2007 model year bus. The corrections to the Staff Report and appendices are on the subsequent pages. The strikeout and underlined text indicate where text has been revised. The balance of the Staff Report and appendices is otherwise substantively the same as released on January 24, 2006.

The corrected Staff Report replaces the version posted to the Air Resources Board's Lower-Emission School Bus Program website on January 25, 2006.

Errata

The following correction is made to the last paragraph on page 2 of the Staff Report based on reexamination of the pre-1977 model year school bus population and an adjustment to how the estimated pre-1977 bus population is described:

In 1977, the federal motor vehicle safety standards went into effect. These standards require school buses to be equipped with seats that provide crash protection as well as other safety related equipment. Based on data provided through the California Highway Patrol (CHP) school bus safety certification program, staff estimates that there are ~~over 200 but less than~~ about 300 school buses manufactured before 1977 currently in use in public school bus fleets. Additionally, these buses were not subject to NOx and PM emission standards and thus are high-emitting. Replacing these buses will result in reduced risk to children's health and safety. The State budget appropriation for new school bus purchase for the 2005-2006 FY is specifically designated for the replacement of pre-1977 school buses. The \$25 million in State funds for the 2005-2006 FY will replace approximately 90 pre-1977 school buses and retrofit nearly 1,000 in-use diesel buses. The timetables for allocation of these funds are given in Table 1 and Table 2 below.

Similar corrections are made to Table 3 and the paragraph preceding it on page 3:

Data provided through the CHP school bus safety certification program indicate that there are currently ~~less than~~ about 300 public school buses in use that were manufactured before 1977, as shown in Table 3 below. These buses were manufactured before either federal motor vehicle safety standards or any emission standards went into effect. As shown in the table, there are on the order of 3,000 to 4,000 school buses manufactured between 1977 and 1986 in public school fleets. These buses conformed to the federal motor vehicle safety standards and were controlled for NOx, but had no PM controls. The remainder of the fleet was manufactured in 1987 or later and is ~~was~~ subject to both NOx and PM emission standards as well as the safety standards.

Model Year	Approx. # of Buses	Safety Standard	NOx Standard	PM Standard
Pre-1977	200 to < <u>~300</u>	NO	NO	NO
1977-1986	3,000 - 4,000	YES	YES	NO
1987- 2005	~12,000	YES	YES	YES
Total	16,000			

On page 4 of the Staff Report, the following clarification is made:

C. 1977 Federal Motor Vehicle Safety Standards – Need for safer buses

In 1977, the federal government established safety requirements for new school buses.^{1,2} No consistent safety requirements were in place for buses produced prior to April 1, 1977. Therefore, replacement of these oldest buses has been a priority. Among the requirements that the new safety standards specify are:

On page 9, the following changes are made to the San Joaquin Valley APCD and total CEC administered program allocations in Table 4, “Proposed New Bus Funding Allocation,” and the paragraph preceding the table. These changes are the result of a correction to the list of California’s oldest school buses to include an additional bus in the San Joaquin Valley APCD.

The buses range in model years from 1951 to 1973. The first ~~8990~~ buses on the list are 1972 model year and older. The last 31 buses on the list are 1973 buses. Staff proposes that for the situation where only a portion of a group of identical MY buses can be replaced, the buses selected for replacement be chosen by lottery in order to release the funds in the most expeditious manner. Proposed new bus funding allocations are shown in Table 4 below for the larger air districts that will administer their own programs and for the CEC administered program, where only the districts with larger numbers of buses to be replaced are shown. For these allocations, it was assumed that the ~~8990~~ buses that are 1972 and older are replaced. The funding amounts shown are based on an approximate cost of \$140,000 per bus. This value should allow the funding of a mix of diesel-fueled and alternatively-fueled buses. If the funding allows for the replacement of more than ~~8990~~ buses, the additional replaced buses will be chosen by lottery from the 1973 model year buses.

Table 4. Proposed New Bus Funding Allocation		
<i><u>Air District Administered Program</u></i>	Approx. Funding	Approx. # of New Buses
San Joaquin Valley APCD	\$4, 20 <u>340</u> ,000	30 <u>1</u>
South Coast AQMD	\$2,100,000	15
Bay Area AQMD	\$560,000	4
San Diego County APCD	\$0	0
Sacramento Metropolitan AQMD	\$0	0
<i>Total Air District Administered Program</i>	\$6,867,000,000	<u>4950</u>
<i><u>CEC Administered Program</u></i>		
Kern	\$1,540,000	11
Ventura APCD	\$980,000	7
Monterey Bay Unified APCD	\$700,000	5
All Other Districts	\$2,380,000	17
<i>Total CEC Administered Program</i>	\$5,64500,000	~40
Total	\$12,500,000	~<u>8990</u>

On page 5 in the following paragraph, a correction to the estimate of pre-1977 model year school buses in the public school bus fleet is made:

E. Need for Funding

Approximately 4,000 of California’s current school buses were manufactured prior to the institution of PM emission standards. Staff estimates that ~~over 200 but less than~~ about 300 of these buses serving public schools were manufactured before the 1977 model year when federal safety standards and NOx emission standards went into effect. To date, most older buses have remained in service due to the lack of school district funding to replace them.

On pages 13 and 14 of the Staff Report, these paragraphs are amended as follows:

E. Impact of the Seat Belt Law

Assembly Bill 15 (AB 15; Statutes of 1999, Chapter 648) initiated a requirement for lap/shoulder belts for all new school buses ~~purchased~~ manufactured on or after January 1, 2002, that are purchased or leased for use in California, unless specifically prohibited by the National Highway Transportation Safety Administration. Implementation was delayed by Senate Bill 568 (SB 568; Statutes of 2001, Chapter 581) until July 1, 2004, for new Type 2 small school buses and until July 1, 2005, for new Type 1 large school buses. The use of lap/shoulder belts will limit seating capacity on new buses to a maximum of two per seat.

Currently, school districts within California typically transport two older students per seat and three younger students per seat to comply with federal motor vehicle safety standards. Buses that only transport older children, those in seventh through twelfth grade, are not expected to lose seating capacity. However, school buses that currently transport primary school-aged children at a capacity of three children per seat will lose maximum seating capacity. This lower seating capacity of newer buses is further pressure on school districts to retain their older buses.

On page 16 of the Staff Report, fourth line, the following clarification is made:

Recently, the first Level 3 active DPF device for on-road vehicles was verified.

On page 23 of the Staff Report, staff has updated the estimate of the immediate, near-term emission reductions due to replacing pre-1977 model year school buses with 2007 model year school buses to reflect a more precise value achieved by obtaining more significant figures from the EMFAC2002 run. This updated estimate is shown in the following paragraphs:

Second paragraph on page 23:

Replacing a pre-1977 bus with either a 2007 alternative-fueled or diesel-fueled bus provides a significant near-term emission benefit of about 1.5 pounds per day of NO_x and about ~~0.060,08~~ pounds per day of PM. That benefit is due to fleet turnover - the new bus has significantly lower emissions than the old bus. However, the benefit would continue only as long as the old bus would have remained on the road. For most heavy-duty vehicles, the remaining life of an older vehicle is assumed to be three to five years. The ARB is currently assessing whether it is appropriate to assume a longer remaining life for school buses.

Fifth paragraph on page 23:

ARB staff used the EMFAC2002 emissions model to estimate the emission benefits associated with replacing 90 pre-1977 school buses with 2007 model year buses to be about 135 pounds per day of NO_x and ~~57~~ pounds per day of PM. It was assumed that all new bus purchases were 2007 model year. These reductions reflect the immediately realized benefits from replacing an old, pre-1977 bus with a new 2007 model year bus. This analysis does not attempt to estimate the remaining life of the older buses or calculate the lifetime emission benefits of school bus replacement.

On page 25 of the Staff Report, staff has made the following corrections to the References:

8. ~~SCAQMD-2001a~~. Rule 1195 Staff Report, "Proposed Rule 1195—Clean On Road School Buses." Author: Ali R. Ghasemi, SCAQMD, April 2001.

9. SCAQMD 2005. "Draft White Paper: Results of School Bus and Infrastructure Survey," ~~January 2005~~. Author: Von Loveland, January 2005.

10. Clean Air Task Force, "A Multi-City Investigation of the Effectiveness of Retrofit Emissions Controls in Reducing Exposures to Particulate Matter in School Buses," Authors: L. Bruce Hill, Ph.D., Neil J. Zimmerman, Ph.D., CIH, James Gooch, January 2005. http://www.catf.us/publications/reports/CATF-Purdue_Multi_City_Bus_Study.pdf

On page 2 of Appendix F, the West Park School District bus is added to the list of California's Oldest School Buses, as shown below:

1/1/1970	San Joaquin Valley Unified	CERES UNIFIED SCHOOL DISTRICT	CERES
1/1/1970	San Joaquin Valley Unified	WEST PARK SCHOOL DISTRICT	FRESNO
1/1/1970	Ventura	OXNARD UNION HIGH SCHOOL DISTRICT	OXNARD

On page 1 of Appendix G, staff has updated the estimate of the immediate, near-term emission reductions due to replacing pre-1977 model year school buses with 2007 model year school buses, similar to the modification to the emission benefits discussion on page 23 of the Staff Report, to reflect a more precise value:

Emission Benefits from New School Bus Purchases

The staff used the ARB's emission inventory modeling program, EMFAC2002 (April 2003 version), to estimate the emission benefits associated with replacing pre-1977 model year school buses with 2007 model year buses. The base assumptions derived from EMFAC2002 are:

- A pre-1977 model year bus accrues about 40 miles per day and emits about 1.9 pounds per day of NOx and 0.09 pounds per day of PM.
- A 2007 model year bus accrues about 40 miles per day and emits about 0.3-0.4 pounds per day of NOx and ~~0.03~~ 0.01 pounds per day of PM.

Consequently, for each pre-1977 model year bus replaced with a new bus (2007 model year), about 1.5 pounds per day of NOx and ~~0.06~~ 0.08 pounds per day of PM are reduced. With funds available to replace about 90 buses (i.e., \$12.5 million in total funding at a cost of \$140,000 per bus), total emission reductions would be about 135 pounds per day of NOx and ~~5-7~~ pounds per day of PM.